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LLAGAS CREEK

ENGINEERING APPENDIX TO WORK PLAN SUPPLEMENT

JANUARY 10, 1977

(FINAL)

LLAGAS CREEK

ENGINEERING APPENDIX TO WORK PLAN SUPPLEMENT

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I INTRODUCTION

This Engineering Appendix has been organized to provide supporting technical information to a Work Plan Supplement which will be prepared to modify the original Watershed Work Plan, dated 1967, for Llagas Creek. More particularly, this Engineering Appendix modifies a previous Engineering Appendix, dated 1966, which accompanied the original Work Plan.

Some completed channel improvements, in accordance with the original Work Plan Concept, have been constructed for a short section of Llagas Creek. In addition, some channels were excavated only as part of a new freeway project. All subsequent construction has been deferred because of environmental regulatory requirements.

Environmental studies were made in 1974 and a Citizens Advisory Committee was formed for the purpose of introducing public participation. The Citizens Committee was presented with several alternate structural solutions. Non-structural solutions were also included for their consideration.

The selected structural plan recommended by the Committee, a modified version of which was adopted by the Sponsors, was essentially a channel alternate similar to the original work plan, but modified as described later in this report. Some non-structural measures were also recommended but are not discussed in this report.

II ORIGINAL DESCRIPTION OF 1967 WATERSHED WORK PLAN

A. General. The 1967 Work Plan included:

1. Raising of the existing Chesboro Reservoir to provide additional flood detention storage.

2. Providing flood protection on the valley floor using an excavated channel solution to increase the capacity of the existing creek bed to accommodate the design flood.

3. Fire protection measures in the upper watershed.

4. A land treatment program.

The plan provided flood protection against a one percent chance flood.

B. Chesbro Reservoir. A description of the raising of Chesbro Reservoir is contained in the 1967 Work Plan and Appendices. Essentially the project consists of raising the dam crest to provide increased flood detention.

C. Channel Improvements and Related Work. In addition to enlarging the existing creek channels and providing erosion protection, the Work Plan included bridge construction and utilities relocation. Some

diversion of existing channels was proposed. Excessive meanderings of the existing creek would be corrected by constructing the new channel in a straight alignment.

D. Engineering and Geologic Appendices. Prepared in 1966, the Appendices were intended to supplement the Work Plan and furnish engineering criteria and preliminary design information for the final design of the project.

E. Work Completed in Accordance with the Plan.

1. Reach No. 1. Reach No. 1 begins at the confluence of Llagas Creek and the Pajaro River and extends upstream to a point 1,500 feet above Bloomfield Road. The improvements were constructed in 1973 and include excavation of the creek bed, relocation of the existing levees, installation of inlet structures and placement of riprap. Work on Bloomfield Road bridge was deferred and costs are included in this current engineering appendix to complete the bridge.

2. Channel Improvements Related to Freeway Construction. Reaches 3, 5, 9 and 14 as designated on Plate 1 were excavated by the State Highway Department (CALTRANS). The excavation was performed concurrently with the construction of the freeway (Highway 101 bypass

of Morgan Hill and Gilroy). Excavation is now substantially complete except as required for grade control structures. Bridges and culverts at freeway crossings are complete. Some erosion protection is installed.

III ENGINEERING CONCEPT (Modified Work Plan)

A. General. Engineering Criteria and Preliminary Design will be as shown in the Engineering Appendix to the 1967 Work Plan except as modified or supplemented as discussed below.

B. Peak Flows. Revised design peak flows related to the 1% chance flood are as shown in Table 1 and are as furnished by the Government except as noted on Table 1 for the channel downstream from Station 93+00.

C. Maximum Allowable Velocities. 6.0 f.p.s. for cohesive soils and according to Figure 6.1 (Curve 1) Technical Release No. 25 for non cohesive soils.

D. Channel Alignment. The design center line locations shown on the plan and profile exhibits in the 1966 Work Plan Appendix have been used for all reaches unless otherwise noted.

E. Reach Numbering and Stationing. To assist the Sponsors and the Citizens Committee in their study of various alternates, the project was divided into numbered reaches. The relation between the reach numbering and the Work Plan stationing is shown on the Project Map. (Plate No. 1.)

F. Excavated Channels. The selected project plan proposes the use of excavated channels similar in detail to the 1967 Work Plan. The channels are generally increased in cross sectional area to accommodate the increased design flows at lower maximum velocities. Excavated channels will be constructed in all reaches except in Reach 6B and for a portion of Reach 6A. Part of the channel program includes rectangular concrete channels for Reach 8A and a portion of Reach 8B.

G. Levee Protected Floodway. A portion of Reach 6A and all of Reach 6B will be contained by levees. Levees will be set back from the creek to form an overbank floodway of sufficient width to contain the peak flows. The levees will be suitably modified at each end of the floodway to form a smooth transition between floodway and excavated channel.

H. Natural State. A portion of Reach 6A immediately south of San Martin Avenue is adequate to accommodate the peak design flow and will be left in a natural state except for the amount of levee required for a hydraulic transition from floodway to natural creek. Rights of way will be acquired to provide for maintenance roads.

I. Deletions. Reach 7C, Edmundson Creek, is deleted from the original

Work Plan because a private developer proposes to construct the reach. A low flow diversion in Reach 7A is also deleted.

J. Creek Diversions. The original flow diversions proposed in the 1967 Work Plan are to remain. A low flow diversion structure will be provided in Reach 7A. Final design should include provision for maintaining nominal low flows in abandoned ox-bow sections resulting from channel straightening.

K. Environmental Mitigations and Landscaping. The original 1967 Work Plan included seeding of the channel. Areas will be seeded as previously proposed. Supplemental work in the modified work plan consists of specific landscaping concepts and additional environmental mitigating measures.

L. Chesbro Reservoir. There are no changes from the original project as described in the 1967 Work Plan and Appendices. Only the cost estimate has been updated.

IV CHANNEL IMPROVEMENTS

A. General. Full details of channel improvements and related work are contained in the Engineering Appendix to the 1967 Work Plan. The following information is intended to modify and supplement the original Engineering Appendix to the Work Plan, prepared in 1966.

B. Layout Plans and Soils Data. Refer to the Plates 19 through 29 in the original Engineering Appendix. Freeway construction shown therein as proposed is now completed. Refer to new Plate 1 (attached) for correlation between reach numbering and work plan stationing.

C. Channel Profiles and Typical Sections. Channel profile design as shown on original Plates 19 through 29 is superseded. Revised channel profiles are shown on new Plates 6 through 16 (attached). Typical sections of a trapezoidal channel are shown on Plate 2. A typical section of concrete lined rectangular channel is shown on Plate 3.

D. Levee Profile and Typical Sections. Plate 1 shows the limits of levee construction on Reaches 6A and 6B. The profile, Plate 11, shows the existing creek bed and the estimated water surface and the design height of the levees. A short transition section is shown at

each end of the levee construction. A typical section of levee controlled floodway is shown on Plate 4.

E. Hydraulic Design Summary. Tabulated values for the principal hydraulic units and the dimensional variables related to the typical cross sections are shown on Plates 18 through 20. A value of n = 0.035 (estimated per Engineering Handbook Section 5, Supplement B) was used for all excavated trapezoidal sections. For concrete lined rectangular channels a value of n = 0.013 was used. In addition, the channel design in non-cohesive reaches was tested for a 10 percent flood using a value of n = 0.025. In all cases the velocity did not exceed the allowable maximum. Flow calculations were based on the Manning formula applied in accordance with SCS National Engineering Handbook Section 5. For trapezoidal cross sections, a b/d ratio of 10 was generally used. The freeboard height was computed at about 0.2 times specific energy. A minimum velocity of 2 f.p.s. was maintained to avoid silting and deposition.

Excavated channels were designed in the following manner.

1. The design peak flows were divided by the maximum velocity or assumed maximum velocity to establish a minimum cross sectional area of channel.

2. A trial unit value of "d" was selected which appeared adequate and considered the effect of specific energy change at the junction with the upstream reach.

3. Generally "b" was then made equal to 10d except for small trapezoidal channels and rectangular channels.

4. An optimum slope was selected which was compatible with the natural ground slope. A uniform slope throughout each reach was maintained where feasible.

5. The trial cross section and slope were checked for actual velocity and compared with the maximum permitted velocity.

6. If necessary, a new value of "d" was selected and/or the slope adjusted until a reasonably close hydraulic balance between elements was obtained.

Levee controlled floodways were designed to accommodate the overspill resulting from the difference between the existing creek capacity and the peak design flows. Velocities in the overbank sections were limited to 4 f.p.s. to minimize erosion of the newly constructed levee. An "n" value of 0.050 was used for the overbank portion of the levee cross section. A freeboard height of two feet was provided for all levees.

F. Transitions. Transitions will be computed by the method described in the 1967 Work Plan Appendix.

G. Curves. The alignment of improved channels is the same as the 1967 Plan. All curves having a radius of under 800 feet will be as listed in the 1967 Work Plan Appendix.

H. Channel Linings. Channels in cohesive soils will be unlined except at channel bends, transitions and structures where riprap will be placed. Channels in non cohesive soils will be lined with riprap as shown on Plate 2. Riprap thickness is as shown on the original Work Plan and will extend three feet below channel bottom and one foot above the water surface. Filter material, nine inches thick, will be provided under all riprap. Rectangular channels in Reachs 8A and a portion of 8B, will be lined with concrete as shown on Plate 3. A covered concrete lined section or box culvert will be constructed between Third Street and Fifth Street in Morgan Hill.

I. Grade Stabilization Structures. All structures were assumed to be box inlet drop spillways, similar to the "Folded Crest Drop Spillway" described in the 1966 Work Plan Appendix. This type of structure is more effective in the larger and deeper channels and for cases where the depth of flow is significantly greater than the required drop. In order to estimate approximate quantities, a typical range of structures was sized for varying flows, channel widths and drops. Estimated concrete quantities for each size are shown on Table 5. For cost estimate purposes, the structure closest to the actual design requirements was selected.

The final design of the structure will incorporate a fish ladder. Exact details of the ladder will be developed from further study of the migrating fish types.

Rock chutes will be considered as an alternative to drop structures during the final design stage.

J. Drainage Inlets. The number of drainage inlets as shown on the 1967 Work Plan Appendix was increased arbitrarily in proportion to the increase in design peak flows to make some allowance for additional construction costs. Specific locations were not established. The number of inlets is shown in Appendix B.

K. Bridges and Culverts. Existing bridges which were previously considered adequate to pass the 1967 design flows were assumed to be still adequate unless a significant change of profile grades suggested replacement. The length of proposed bridges equals the channel width at the revised design water surface level where the crossing is made. Tabulation of physical data for each proposed bridge is given in Tables 2A and 2B. For flows less than 2,000 c.f.s., an R.C.B. box culvert was substituted for a bridge. Sizes of proposed culverts were increased to accommodate the revised design flows. Size and location of new R.C.B. culverts are shown on Table 3A.

Reach 14, from Church Avenue to East Middle Avenue, contains four highway crossings recently constructed by the State consisting of multi-cell box culverts. The box culverts were designed to pass the design flows specified in the 1967 Work Plan. Although the design flows are unchanged between Station 0+00 and Station 121+50, the allowable velocity has been reduced from 8 f.p.s. to 6 f.p.s. necessitating a wider channel and reduced depth of flow. From Station 121+50 to Station 180+50 the design flow has also been increased. In order to retain the existing culverts, the bottom of channel profile of the proposed channel improvements will conform to the floor

elevations of the existing box culverts. Additional cells will be added to the present structures as noted in Table 3A.

Reach 8A contains a significant amount of proposed box culvert construction. The connecting channel between culverts is a rectangular concrete section. Table 3B shows the equivalent amount of Federal channel corresponding to the box culvert portions.

L. Fords. Two existing fords on Reach 6A and 6B will remain as fords under the selected plan. The banks of the channel or levee will be flattened to a 6 to 1 slope for accessibility. A 12-foot wide concrete roadway will be built across the channel or natural creek bed. The wetted perimeter of the trapezoidal channel will be riprapped for a distance of 50 feet above and below the ford.

M. Maintenance Roadways. Maintenance roadways, 18 feet wide, will be constructed adjacent to all channels. Typical locations are shown on Plates 2 through 5. The roadway will not be paved. The concrete lined channel through Morgan Hill will be provided with a maintenance road along one side of the channel.

N. Rights of Way (Construction). Rights of way for construction will be acquired to include channel and levee construction, maintenance

roadways, and drainage ditches. Right of way width for trapezoidal channels is shown on Plate 2, and for rectangular channels, on Plate 3. Right of way width for levee construction is shown on Plate 4. Portions of Reaches 6A and 6B will be left in a natural state. Rights of way will be acquired to include the creek bed and a maintenance road on each side of the existing creek as shown on Plate 5.

A Land Acquisition Summary is shown on Table 4.

In the event that right of way acquisition proves too costly or creates a hardship for the property owner, then consideration should be given to reducing the maintenance road requirements or realigning the maintenance road away from the channel for short distances.

O. Rights of Way (Landscaping). Provision has been made for future landscaping requirements. In the absence of an approved landscaping plan a constant width of 10 feet on each side of the creek has been assumed for estimating land acquisition costs for landscaping. The acquisition cost is in addition to the cost of land acquired for construction purposes.

The amount of additional acreage estimated for landscaping purposes is shown on Appendix E and is itemized as an additional cost in Appendix C.

V ENVIRONMENTAL MITIGATION MEASURES

A. Channel Design and Construction. Long range stream erosion in the channels will be reduced through flatter stream bed slopes, rock lining (riprap) of erodible channel banks, vegetative planting of all channel banks not lined, and the use of permanent drop structures or spillways.

Disturbance of channel bottom percolation zone(s) in Reaches 6A and 6B will be minimized by either leaving the creek in a natural state or using levees for flood protection. The prime groundwater recharge areas will be undisturbed.

During construction, the contractor should be required to operate and maintain all facilities and equipment required to maintain the quality of water flowing through the work site. Spills of petroleum products and/or chemicals should be avoided.

The drop structures or spillways and other features included to mitigate the bank erosion problem (above) will reduce velocity, increase detention time and will mitigate against lower water temperature and improve dissolved oxygen content. Replacement of

shading vegetation will restore loss of habitat for shade seeking creek wildlife.

Every effort will be made to preserve the Virgil Moniz house and its grounds in Morgan Hill in Reach 8B. If the house cannot be saved, a detailed architectural and archeological study of the premises should be conducted prior to construction.

Prior to construction, sample excavations should be undertaken at the three possible prehistoric sites in the section of Llagas Creek south of San Martin to Buena Vista Avenue. Based on this determination, salvage excavations will be provided. Archeological salvage will be done in consultation with the National Park Service.

Installation of a "low flow" inner channel will concentrate low flows and provide an adequate depth to allow passage of migrating fish.

Installation of fish ladders at all drop structures in the main channel will permit passage of migrating fish.

Short term decrease in air quality due to construction dust generation and vehicle emissions can be mitigated to a certain extent by

limiting the transportation of materials and/or equipment to designated roads or areas. Dust can be minimized by clean up, sprinkling, or other acceptable practices.

B. Channel Landscaping. The natural creek channel has developed over years of interaction between water, soil, plant and weathering process. Generally the creek is uneven and natural, having a variety of tree groves and plant masses. There is an inherent sense of visual continuity to the natural creek.

The proposed creek channelization will create a sudden change to the creek bed, creek edges and surrounding environment. In order to provide environmental mitigation and landscaping measures, general landscape concepts have been developed as shown on Plate 6.

1. Retain as many major trees and plant masses as possible. The large tree groves and plant masses are key elements of both the intimate and distant visual landscape.

2. Plant large clusters of trees at all public road crossings and along the creek where it parallels public roads. The tree and plant masses will screen the newly constructed channels and ultimately create a pleasant, natural and spacial experience in the public areas.

3. Plant tree clusters at random distances along the new channels. The tree groves will visually tie the creek into the surrounding landscape, creating a natural environment.

4. Allow native wildflowers, grasses and shrubs to be re-established along the new channel.

C. Levee Landscaping. A similar concept will be applied to the levee design in Reaches 6A and 6B as shown on Plate 7.

D. Natural Creek. Existing trees are to remain. If removal is necessary for maintenance access, the trees should be replanted. Plant tree clusters and random distances along the natural channel at strategic locations to add interest and continuity to the landscaping concept.

VI ESTIMATED COSTS FOR CHESBRO RESERVOIR

All costs for raising Chesbro reservoir were furnished by the Government. Construction cost estimates are in three parts.

	As Furnished 1973-74	Escalated to 1975
a) Raising Chesbro Reservoir	$1,700,000[73]	$2,040,000
b) Road Relocation	1,261,000[73]	1,513,000
c) Land, Buildings and Relocation Allowances	2,420,000[74]	2,662,000
d) Geologic Investigations	-	60,000
e) Stability Analysis	-	100,000

The above costs do not include Engineering and Administration costs. Such incidental costs are included in the Cost Summary Table in Part VII of this report.

Cost tabulations are detailed in Appendix A. Items d) and e) have been added to the usual 25 percent engineering and administration allowance.

VII ESTIMATED COSTS FOR CHANNEL IMPROVEMENTS

A. Unit Costs. Unit costs for all construction and land purchase items are based on 1975 prices and are shown on Table 6.

B. Channel Costs. Channel costs include all work related to the creek improvements such as channel excavation, channel lining, grade stabilization and control structures, drainage inlets, seeding and landscaping. Channel excavation quantities exclude prior excavation by others. The cost tabulations are detailed in Appendix B.

C. Other Construction Costs. Other construction costs include bridges, culverts and relocation of utilities. Cost tabulations are detailed in Appendix C.

D. Land Costs. Land costs include land acquisition and the cost of buildings when removal is required. Cost tabulations for each reach are detailed in Appendix C.

E. Reach No. 1. The actual cost of construction for work completed is $580,000. Replacement of the bridge at Bloomfield Road was deferred. The estimated replacement cost in 1975 dollars is $213,000. The above costs are included at the foot of Table 8.

VIII COST SUMMARY TABLE

A summary of all estimated costs is detailed on Table 8. Costs are tabulated as follows:

A. Capital Costs. Capital costs comprise:

1. Installation Costs relate directly to actual channel construction and are as detailed in Attachment A. Engineering and Administration charges, computed at 25 percent of construction cost, are shown in the adjacent column.

2. Other Installation Costs cover all other construction items and are as detailed in Attachment B. Engineering and Administration charges, computed at 25 percent of construction cost, are shown in the adjacent column.

3. Land Costs are detailed in Attachment B. Administration charges, computed at 15 percent of construction cost, are shown in the adjacent column.

B. Average Annual Costs.

1. Capital costs are amortized using a factor of 0.03388 based on

a rate of 3-1/4 percent for a 100 year period. The rate of 3-1/4 percent corresponds to the Federal Project Evaluation Rate for 1968.

2. Costs for routine channel maintenance are estimated at $2,000 per mile per year.

3. Costs for Chesbro Dam maintenance were furnished by the South Santa Clara Valley Water Conservation District.

DESIGN PEAK FLOWS FOR ALL CHANNEL REACHES
1% CHANCE FLOOD

CHANNEL REACH No.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C: COHESIVE NC: NON COHESIVE	Q DESIGN CAPACITY (C.F.S.)
	LOWER LLAGAS CREEK			
1 *	0+00	30+00	C	10,000
	30+00	47+50	C	14,000
	47+50	64+00	C	13,900
2 *	64+00	93+00	C	13,900
	93+00	121+00	C	17,100
	121+00	127+40	C	17,100
	127+40	150+00	C	16,300
	150+00	160+00	C	16,300
	160+00	182+00	N.C.	16,300
3	182+00	190+80	N.C.	16,300
	190+80	294+00	N.C.	10,100
	294+00	379+00	C	9,300
4	379+00	386+00	C	9,300
	386+00	420+00	N.C.	8,900
	420+00	441+00	N.C.	8,900
	441+00	458+00	N.C.	8,900
	UPPER LLAGAS CREEK			
	458+00	498+15	N.C.	8,900
5	498+15	513+00	N.C.	5,400
	513+00	522+00	N.C.	5,400
6A	522+00	580+00	N.C.	5,400
	580+00	650+00	N.C.	5,100
	650+00	687+00	N.C.	5,100
	687+00	703+00	N.C.	5,100
6b	703+70	724+50	N.C.	3,430
	724+50	735+00	N.C.	3,430
	WEST LITTLE LLAGAS CREEK			
7A	0+00	11+50	N.C.	2,160
	11+50	46+50	N.C.	2,160
	46+50	75+50	C.	2,160

CHANNEL REACH No.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C: COHESIVE NC: NON COHESIVE	Q DESIGN CAPACITY (C.F.S.)
7A	75+50	96+40	C	1,680
7b	96+40	130+20	C	1,470
	130+20	144+00	C	1,300
	EDMUNDSON CREEK			
7C	0+00	17+00	C	465
	WEST LITTLE LLAGAS CREEK			
8A	144+00	173+94	C	1,300
	173+94	195+15	C	810
8b	195+15	227+35	C	510
	WEST BRANCH LLAGAS CREEK			
9	0+00	55+00	C	5,200
	55+00	169+00	C	4,200
10	169+00	182+00	C	4,200
	LIONS CREEK			
10	182+00	195+00	C	2,000
	WEST BRANCH LLAGAS CREEK			
11A	182+00	220+00	C	2,900
11b	220+00	226+00	C	2,900
	226+00	297+00	C	2,700
	LIONS CREEK			
12	195+00	211+00	C	2,000
	211+00	235+00	C	900
	235+00	245+00	C	900
	245+00	285+00	C	800
	MOREY CHANNEL			
13	211+00	230+00	C	450
	230+00	245+00	C	200

CHANNEL REACH No.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C: COHESIVE NC: NON COHESIVE	Q DESIGN CAPACITY (C.F.S.)
13	217+00	233+00	C	280
	EAST LITTLE LLAGAS CREEK			
14	0+00	6+00	C	4,160
	6+00	32+00	C	3,630
	32+00	52+00	C	3,630
	52+00	121+50	C	2,940
	121+50	180+50	C	1,960
	CORRALLITOS CREEK			
	0+00	6+45	C	1,440
15A	6+45	10+00	C	1,440
	10+00	45+20	C	1,440
15b	45+20	77+50	C	1,440
	TENNANT CREEK			
	77+50	126+70	C	640
	EAST LITTLE LLAGAS CREEK			
16	180+50	220+85	C	660

NOTES

* Exceptions to the 1% Chance Flood are as follows:

Station 0+00 to 30+00, 10% Chance
30+00 to 64+00, 4% Chance
64+00 to 93+00, 2% Chance

TABLE 1

TABLE 2A

PROPOSED BRIDGES - PHYSICAL DATA

Reach No.	Station	Type	Length Ft.	Width Ft.	Area S.F.
1	47+00	County	220	32	7,040
2	85+00	Private	196	10	1,960
	127+40	Private	210	10	2,100
	182+00	State	210	32	6,720
3	238+00	County	168	32	5,376
	294+00	County	168	32	5,376
	379+00	County	168	32	5,376
4	441+00	County	140	32	4,480
	467+30	County	140	32	4,480
7A	88+50	Private	70	10	700
7B	104+40	Private	70	10	700
	111+10	Private	70	10	700
	116+30	Private	70	10	700
	121+20	Private	70	10	700
	125+60	Private	70	10	700
	128+90	Private	70	10	700
	131+10	Private	70	10	700
	132+70	Private	70	10	700
	134+90	Private	70	10	700
	137+90	Private	70	10	700
	139+40	Private	70	10	700
	141+80	Private	70	10	700
8B	201+35	Private	16	10	160
	213+35	Private	16	10	160
	222+55	Private	16	10	160

TABLE 2B

PROPOSED BRIDGES - PHYSICAL DATA

Reach No.	Station	Type	Length Ft.	Width Ft.	Area S.F.
9	58+00	County	Newly constructed bridge adequate		
	115+00	County	Newly constructed bridge adequate		
	147+00	County	112	32	3,584
	169+00	Railroad	112	NA	NA
10	170+00	State	112	100	11,200
	192+00	County	84	32	2,688
11A	193+00	County	98	32	3,136
	220+00	County	98	32	3,136
11B	296+20	County	84	32	2,688
12	206+00	County	84	32	2,688
	250+00	County	44	32	1,408
13	232+50	County	42	32	1,344
	244+00	County	42	32	1,344
14	168+00	Private	84	10	840
15B	56+00	Private	70	10	840

TABLE 3A

PROPOSED BOX CULVERTS - PHYSICAL DATA

Reach No.	Station	Waterway Opening	Height Ft.	Length Ft.	Concrete CY/LF	Concrete Total
7A	30+70	12' Double Box	9	40	3.15	126
	59+80	12' " "	9	40	3.15	126
	96+40	8' " "	8	40	1.62	65
						317
7B	130+20	8' Double Box	8	40	1.62	65
	144+00	8' " "	8	62	1.62	97
						162
8A	148+50	8' Double Box	8	60	1.62	97
	152+26	8' " "	8	80	1.62	130
	156+13	8' " "	8	80	1.62	130
	161+72	8' " "	8	76	1.62	123
	164+84	8' " "	8	50	1.62	81
	173+94	8' " "	7	60	1.56	94
	195+15	8' " "	7	100	1.56	156
						811
8B	226+65	8' Double Box	6	40	1.42	57
14	28+00*	Add 12' Triple Box	10	32	4.84	155
	98+00*	Add 12' Double Box	6	32	3.15	101
	126+50*	Add 10' " "	7	40	2.64	106
	173+30*	Add 12' " "	8	165	3.59	592
	180+50	Existing structure adequate				
						954
15A	45+20	10' Triple Box	8	40	3.40	136
15B	71+80	10' Triple Box	8	110	3.40	374
	84+50	8' Double Box	8	40	1.62	65
	99+50	8' " "	8	40	1.62	65
	126+50	8' " "	8	40	1.62	65
						569
16	197+80	8' Double Box	8	40	1.62	65
	209+80	8' " "	8	40	1.62	65
						130

*The recently built existing structure requires widening to conform to increased design channel width. It is proposed to add additional cells to the present structure as noted.

TABLE 3B

PROPOSED BOX CULVERTS - REACH 8A

ALLOCATION OF CONCRETE BETWEEN FEDERAL AND OTHER CONSTRUCTION

Station	Total Concrete C.Y.	Equivalent Federal Rectangular Channel				Concrete C.Y. Other Construction
		p	S	p ÷ S	Concrete C.Y.	
148+50	97	32	56	0.58	56	41
152+26	130	32	56	0.58	75	55
156+13	130	32	56	0.58	75	55
161+72	123	32	56	0.58	71	52
164+84	81	32	56	0.58	47	34
173+94	94	30	53	0.57	54	40
195+15	156	30	53	0.57	89	67
Total Concrete	811				467	344

Notes

1. Read in conjunction with Physical Data table.
2. p = perimeter of equivalent Federal rectangular channel in feet.
3. S = Sum of perimeter of walls, top and bottom slab for box culvert.

TABLE 4

SUMMARY OF LAND ACQUISITION REQUIREMENTS (CONSTRUCTION)

A = SCCW&FCD B = STATE PURCHASE

Reach No.	Average R/W Width (Feet)	R/W Needed (Acres)	Prior Acquisition (Acres)	by	Balance of R/W Remaining for Purchase (Acres)
2	276	74.77	40.761	A	34.01
3	244	110.36	86.719	A	23.64
4	230	62.94	47.507	A	15.43
5	193	10.54	7.67	B	2.87
6A	243	101.78	.006	A	101.77
6B	233	16.75	---		16.75
7A	153	30.07	---		30.07
7B	137	14.96	---		14.96
8A	42	4.95	---		4.95
8B	87	6.11	---		6.11
9	185	71.61	29.128 29.072	A B	13.41
10	163	9.73	.886	A	8.84
11A	166	14.48	7.770	A	6.71
11B	152	26.93	10.712	A	16.22
12	116	23.93	---		23.93
13 N & S	97	11.16	---		11.16
14	159	68.39	55.21	B	13.18
15A	139	12.36	---		12.36
15B	121	22.62	3.333	A	19.29
16	114	10.56	1.555		9.01
		705.00	320.329		384.67

TABLE 5

SELECTED RANGE OF BOX INLET DROP SPILLWAYS

Q	W	B	L_S	L_B	D	Concrete (Cu.Yd.)
17,000	70	70	15	100	6	1,350.7
9,000	50	50	12	75	5	824.1
5,000	38	38	9	57	3	488.0
3,000	32	32	7	48	3	270.1
2,000	25	25	6	38	2	237.0
1,000	16	16	5.5	24	5	174.3

TABLE 6

UNIT COSTS FOR CHANNEL IMPROVEMENTS AND LAND ACQUISITION

Item	(1975 Dollars) Unit Cost
CHANNEL COSTS	
Channel Excavation	1.65 C.Y.
Compacted Embankment (Channels)	0.50 C.Y.
Drop Structures	200.00 C.Y.
Drainage Inlets	3,000.00 Ea.
Riprap	20.00 C.Y.
Filter Stone	15.00 C.Y.
Seeding	650.00 Ac.
Landscaping	L.S.
Structural Excavation	3.00 C.Y.
Rect. Concrete Channel	126.00 C.Y.
Compacted Backfill	5.00 C.Y.
Levee Embankment	1.25 C.Y.
Site Preparation (Levees)	3.00 L.F.
OTHER CONSTRUCTION COSTS	
State and County Bridges	24.00 S.F.
Private Bridges	12.50 S.F.
RCB Culverts	145.00 C.Y.
Relocation of Utilities	L.S.
Railroad Bridge	300.00 L.F.
LAND PURCHASE	
Creek Bottom	100.00 Ac.
Agricultural	3,500.00 Ac.
Residential (Low Value)	8,000.00 Ac.
Residential (Medium Value)	10,000.00 Ac.
Residential (High Value)	13,000.00 Ac.
School	13,000.00 Ac.
Industrial	20,000.00 Ac.
Dwellings	25,000.00 Ea.

TABLE 7A

UTILITIES RELOCATION

Reach No.	Station	Utility	Estimated Relocation Cost 1966	1975
1	47+50	Raising Bloomfield Road	$12,230	$19,600
2	107+00	8" buried steel pipe	1,200	1,900
	107+50	One power pole	300	500
	127+30	Well, pump and Pump House	3,300	5,300
	127+30	Power pole	300	500
	176+00	6" gas main buried	1,000	1,600
3	192+50	Power pole	300	500
	228+10	Well and pump	3,000	4,800
	231+50	Well and pump	3,000	4,800
	238+80	Power pole	300	500
	240+00	Barn	12,000	19,200
	240+50	Power pole	300	500
	*	Relocate Hosclaw Road	21,400	34,200
	254+70	Power pole	300	500
	255+90	Power pole	300	500
	298+00	4" gas main	500	800
	298+50	Power pole	300	500
4	413+00	Well and pump	3,000	4,800
	413+10	6" steel pipe	1,000	1,600
	467+50	Utility pole	300	500
5	505+00	Utility pole	300	500
6A	550+00	4" gas main buried	500	800
	550+50	3" water line	450	700
	671+00	2" gas main buried	350	500
	682+30	6" suspended irrigation pipe	1,000	1,600
	686+00	4" gas main buried	500	800
	686+20	Buried telephone cable	1,000	1,600

TABLE 7B

UTILITIES RELOCATION

Reach No.	Station	Utility	Estimated Relocation Cost 1966	1975
7B	96+50	2" gas line (P.G. & E.)	$ 350	$ 600
	104+40	12" sewer line	3,000	4,800
	106+50	12" sewer line	5,300	8,500
	129+50 (Spring)	2" gas line (P.G. & E.) 4" water line 6" sewer line	3,000	4,800
	144+00 (Dunne)	4" gas line 4" water line	3,000	4,800
8A	148+80 (5th)	6" water line 6" sewer line 4" gas line	3,000	4,800
	152+47 (4th)	4" water line 6" sewer line 2" gas line	3,000	4,800
	156+13 (3rd)	6" water line 6" sewer line	3,000	4,800
	161+72 (Del Monte)	6" sewer line 6" water line	3,000	4,800
	164+84 (Warren)	6" sewer line 4" water line 4" gas line	3,000	4,800
	173+94 (Main)	8" water line 4" water line 6" sewer line	3,000	4,800
	194+65 (Hale-Wright)	8" water line 4" gas line 6" sewer line	3,000	4,800
8B	222+55 (Private Bridge)	2" water line	350	600

TABLE 7C

UTILITIES RELOCATION

Reach No.	Station	Utility	Estimated Relocation Cost 1966	1975
9	63+00	2 - 21" sewer siphons	$10,000	$16,000
	168+00	Micro-wave cable	7,500	12,000
	168+00	4" gas line	500	800
10	192+00	2" gas line	500	800
11A	193+00	2" gas line	500	800
12	205+00	2" gas line	500	800
14	27+80	4" gas main (P.G. & E.) (2)	1,000	1,600
	97+50	3" water line	400	600
		1" water line	300	500
		Utility pole	300	500
	98+60	2" gas pipe (P.G. & E.)	350	400
	139+00	4" irrigation line	200	300
	173+20	2" gas pipe	350	600
		Utility pole	300	500
	180+00	Utility pole	300	500
15A	10+00	10" irrigation line	250	400
15B	58+00	12" irrigation line	300	500
	65+00	12" irrigation line	300	500
	119+00	Utility pole	300	500
16	198+00	Utility pole	300	500

TABLE 8 LLAGAS CREEK SUMMARY OF ESTIMATED COSTS

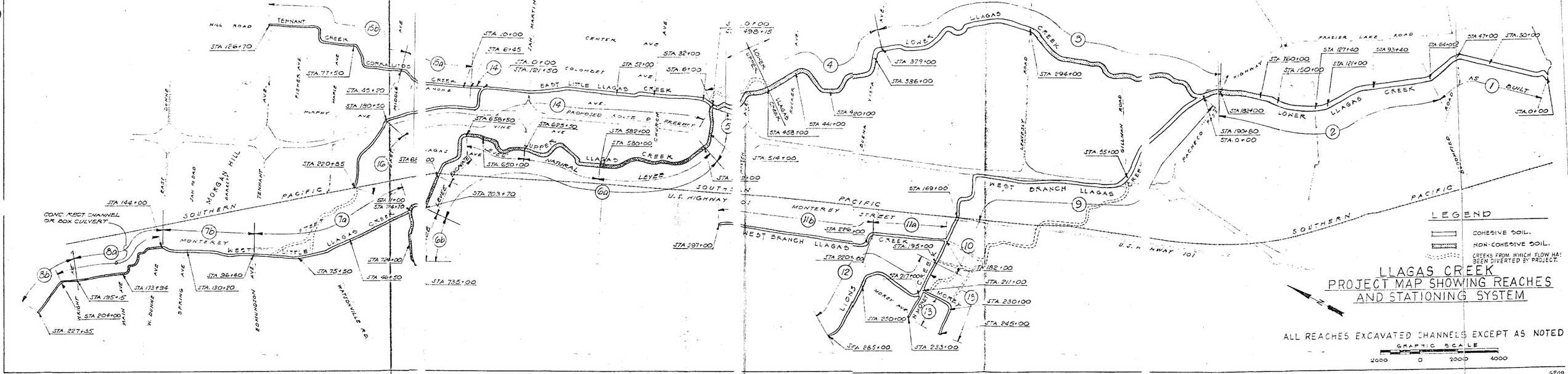
(All Amounts Rounded to Nearest $100)

REACH NO.	CAPITAL COSTS									AVERAGE ANNUAL COSTS			
	INSTALLATION COSTS			OTHER INSTALLATION COSTS					GRAND TOTAL	CAPITAL COSTS AMORTIZED	M & O		TOTAL ANNUAL EQUIVALENT
	Construct	Eng.	Total	Land	Admin.	Construct	Eng.	Total			Mi.	$	
2	3,409,900	852,500	4,262,400	209,100	31,400	314,900	78,700	634,100	4,896,500	165,900	2.23	4,500	170,400
3	3,664,500	916,100	4,580,600	442,900	66,400	621,100	155,300	1,285,700	5,866,300	198,800	3.73	7,500	206,300
4	3,119,500	779,900	3,899,400	540,900	81,100	315,500	78,900	1,016,400	4,915,800	166,500	2.26	4,500	171,000
5	546,000	136,500	682,500	80,100	12,000	33,000	8,300	133,400	815,900	27,600	0.45	900	28,500
6A	617,800	154,500	772,300	747,400	112,100	96,900	24,200	980,600	1,752,900	59,400	3.44	6,900	66,300
6B	92,800	23,200	116,000	140,100	21,000	15,900	4,000	181,000	297,000	10,100	0.59	1,200	11,300
7A	854,900	213,700	1,068,600	364,900	54,700	106,300	26,600	552,500	1,621,100	54,900	1.61	3,200	58,100
7B	181,700	45,400	227,100	202,300	30,300	171,800	43,000	447,400	674,500	22,900	0.90	1,800	24,700
8A	920,400	230,100	1,150,500	104,800	15,700	104,400	26,100	251,000	1,401,500	47,500	0.97	1,900	49,400
8B	182,300	45,600	227,900	92,800	13,900	36,500	9,100	152,300	380,200	12,900	0.61	1,200	14,100
9	955,700	238,900	1,194,600	768,200	115,200	256,200	64,100	1,203,700	2,398,300	81,300	3.20	6,400	87,700
10	300,100	75,000	375,100	134,100	20,100	397,300	99,300	650,800	1,025,900	34,800	0.49	1,000	35,800
11A	288,000	72,000	360,000	199,200	29,900	193,200	48,300	470,600	830,600	28,100	0.72	1,400	29,500
11B	511,300	127,800	639,100	282,800	42,400	113,200	28,300	466,700	1,105,800	37,500	1.45	2,900	40,400
12	446,600	111,700	558,300	256,700	38,500	159,500	39,900	494,600	1,052,900	35,700	1.70	3,400	39,100
13S	65,400	16,400	81,800	82,100	12,300	91,400	22,900	208,700	290,500	9,800	0.64	1,300	11,100
13N	38,500	9,600	48,100	42,200	6,300	8,100	2,000	58,600	106,700	3,600	0.30	600	4,200
14	788,300	197,000	985,300	719,700	108,000	272,100	68,000	1,167,800	2,153,100	72,900	3.54	7,100	80,000
15A	515,800	129,000	644,800	132,000	19,800	42,800	10,700	205,300	850,100	28,800	0.73	1,500	30,300
15B	137,200	34,300	171,500	248,000	37,200	150,000	37,500	472,700	644,200	21,800	1.54	3,100	24,900
16	111,000	27,800	138,800	111,300	16,700	42,200	10,600	180,800	319,600	10,800	0.76	1,500	12,300
SUB-TOTAL	17,747,700	4,437,000	22,184,700	5,901,600	885,000	3,542,300	885,800	11,214,700	33,399,400	1,131,600	-	63,800	1,195,400
1	580,000*	145,000	725,000	-	-	213,000	53,300	266,300	991,300	33,600	1.21	2,400	36,000
CIES. DAM	2,040,000	660,000**	2,700,000	2,662,000	399,300	1,513,000	378,300	4,952,600	7,652,600	259,300	-	60,000	319,300
TOTAL	20,367,700	5,242,000	25,609,700	8,563,600	1,284,300	5,268,300	1,317,400	16,433,600	42,043,300	1,424,500		126,200	1,550,700

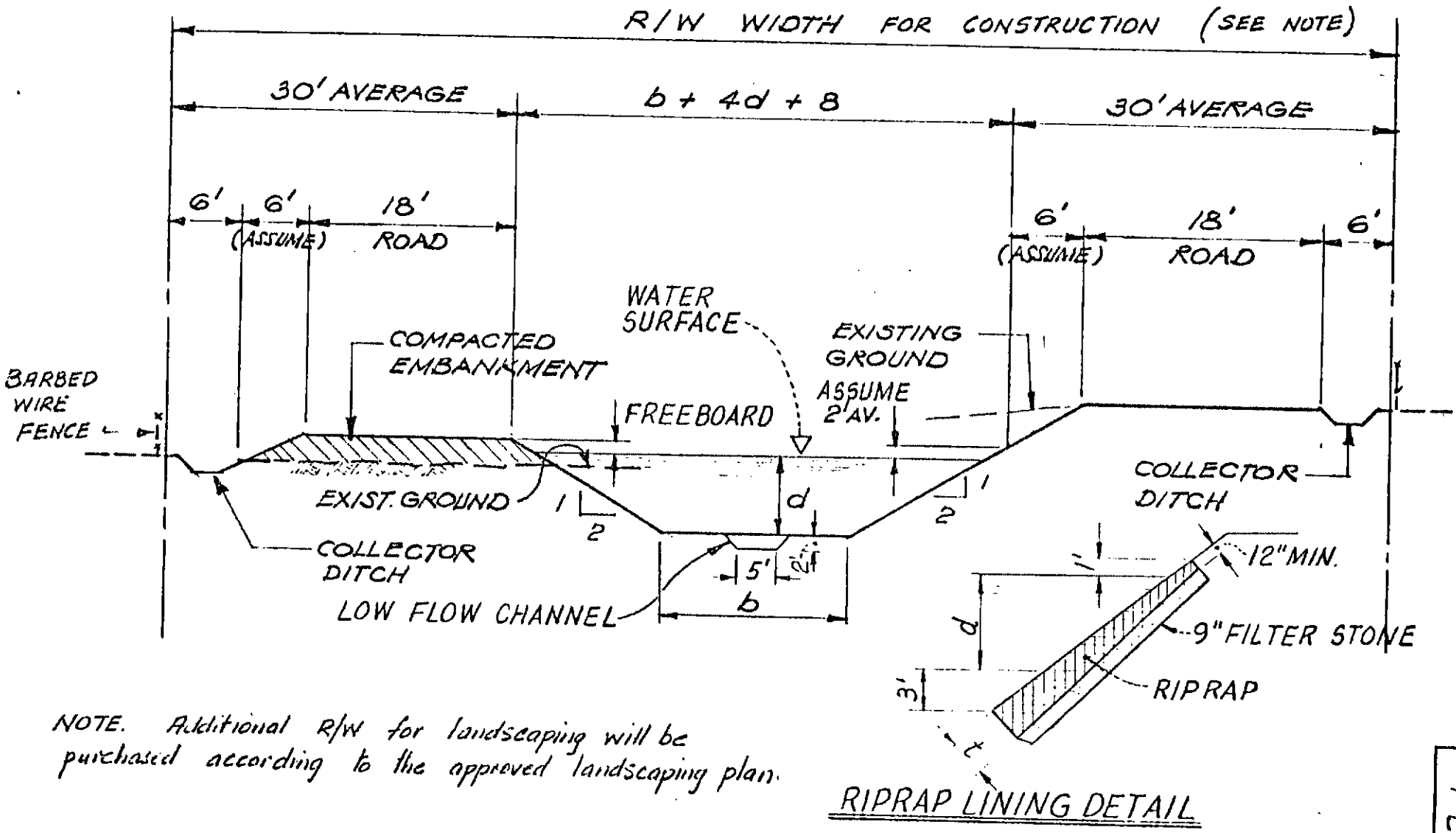
* Actual cost of construction.

** Includes $160,000 for special engineering investigation.

PLATE 1


HILL ROAD
TENNANT
CREEK
CORRALITOS
STA 126+70
STA 77+50
STA 45+80
STA 130+50
STA 220+85
STA 144+00
CONC. RECT CHANNEL OR BOX CULVERT
MORGAN HILL
EAST
JAN ROAD
TENNANT
PACIFIC
SOUTHERN
MONTEREY
WEST
LITTLE
LLAGAS
CREEK
STA 111+00
STA 114+70
STA 158+00
STA 173+94
STA 195+15
STA 204+00
STA 227+35
STA 96+40
STA 130+20
STA 75+50
STA 72+00
STA 46+50
WATSONVILLE RD.
EDMUNDSON AVE.
SAKING AVE
W. DUNNE AVE
MAIN AVE
WILSON
MURPHY AVE
FISHER AVE
MIDDLE AVE
SAN MARTIN
CENTER AVE
COLOMBET AVE
EAST LITTLE LLAGAS CREEK
PROPOSED KOLLE & FREEWAY
CHURCH
VINE
UPPER NATURAL LLAGAS CREEK
LEVEE
SOUTH
U.S. HIGHWAY
STA 10+00
STA 6+45
STA 0+00
STA 121+50
STA 52+00
STA 32+00
STA 61+00
STA 658+50
STA 625+50
STA 582+00
STA 580+00
STA 650+00
STA 70.3+70
STA 735+00
STA 297+00
LOWER LLAGAS CREEK
LLOYD MAHER
STA 379+00
STA 386+00
STA 420+00
STA 441+00
STA 458+00
STA 514+00
STA 294+00
STA 55+00
GILLMAN ROAD
BUENA VISTA
LEVEE
WEST BRANCH LLAGAS CREEK
STA 169+00
STA 226+00
STA 195+00
STA 220+60
STA 271+00
STA 182+00
STA 211+00
STA 230+00
STA 245+00
STA 250+00
STA 285+00
STA 253+00
LIONS
MORAT AVE
MONTE
FRAZIER LAKE ROAD
PACHECO PASS HIGHWAY
STA 760+00
STA 150+00
STA 182+00
STA 190+80
STA 0+00
STA 127+40
STA 121+00
STA 93+40
STA 64+00
STA 47+00
STA 30+00
AS BUILT
STA 0+00
BLOOMFIELD ROAD
LEGEND
COHESIVE SOIL.
NON-COHESIVE SOIL.
CREEKS FROM WHICH FLOW HAS BEEN DIVERTED BY PROJECT.
LLAGAS CREEK
PROJECT MAP SHOWING REACHES AND STATIONING SYSTEM
ALL REACHES EXCAVATED CHANNELS EXCEPT AS NOTED
GRAPHIC SCALE
2000 0 2000 4000

6209



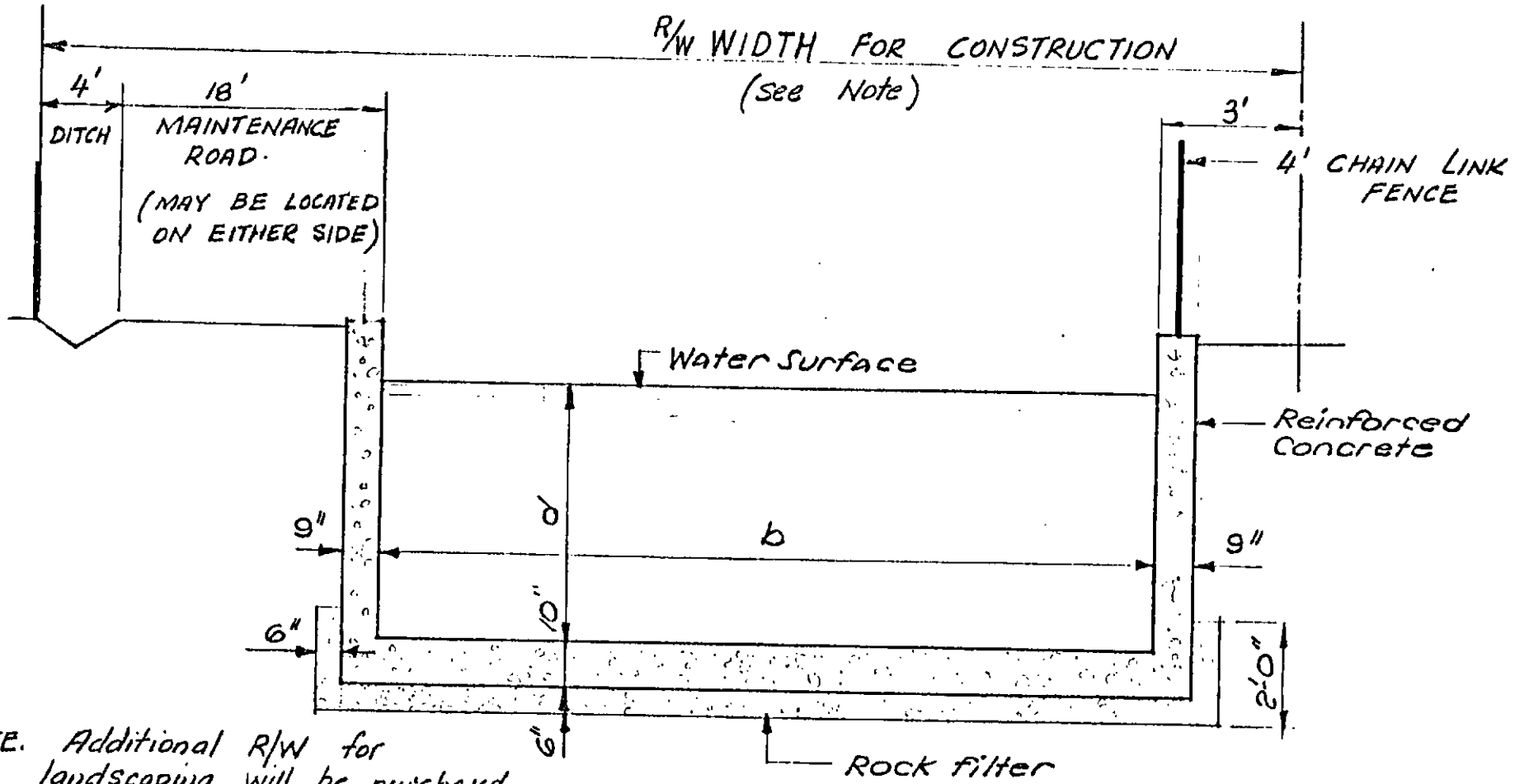
NOTE. Additional R/W for landscaping will be purchased according to the approved landscaping plan.

RIPRAP LINING DETAIL

TYPICAL SECTION ~ TRAPEZOIDAL CHANNEL

NO SCALE

PLATE 2



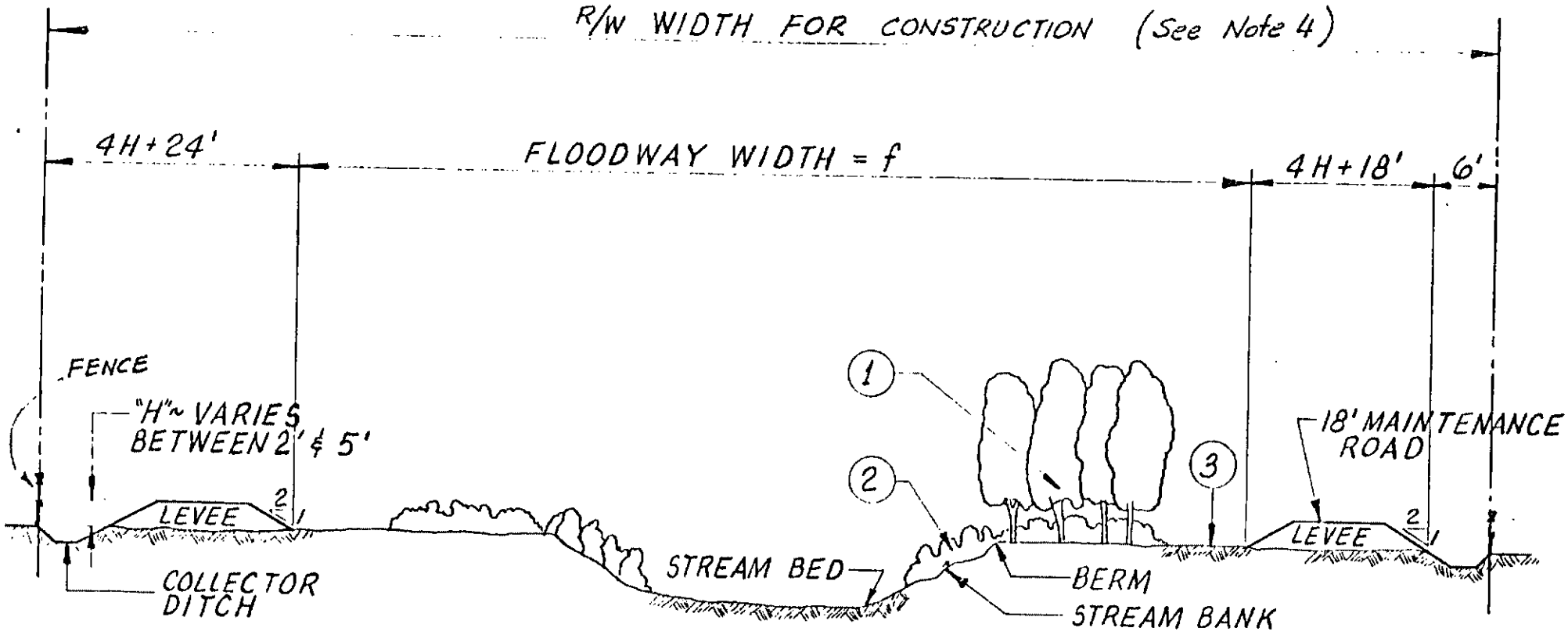
NOTE. Additional R/W for landscaping will be purchased according to the approved landscaping plan.

TYPICAL SECTION

CONCRETE LINED RECTANGULAR CHANNELS

NO SCALE

PLATE 3



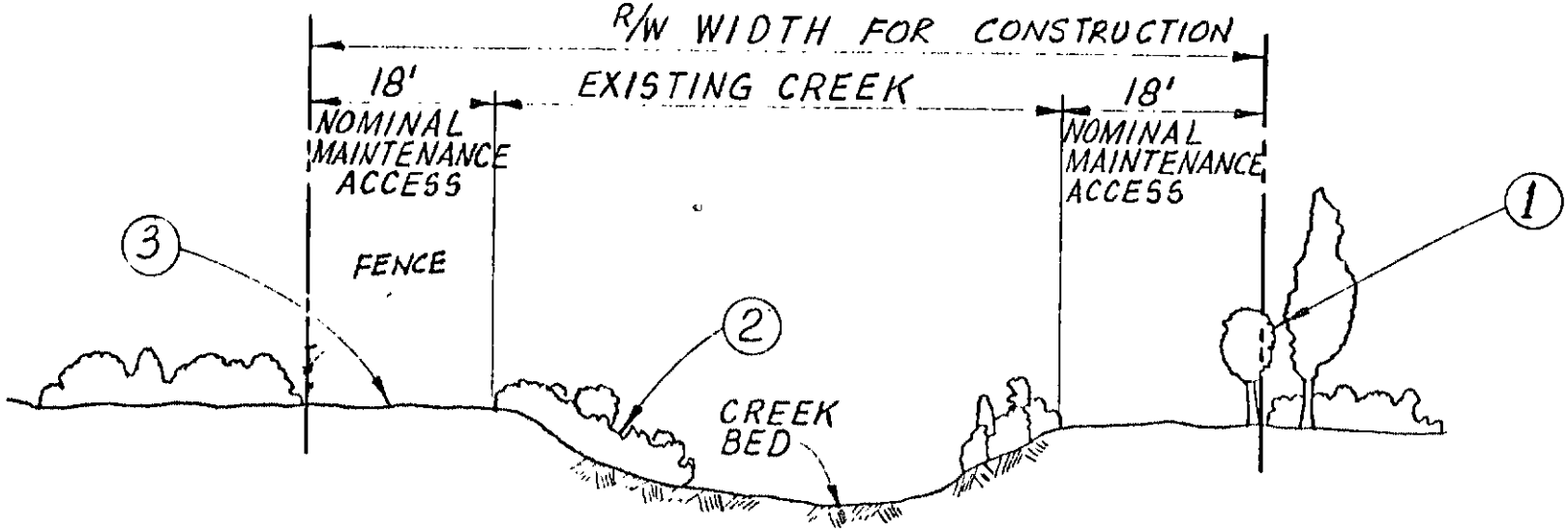
NOTES:

1. EXISTING TREES TO REMAIN OR TO BE REPLANTED AS RECOMMENDED IF REMOVAL IS NECESSARY.
2. EXISTING VEGETATION TO REMAIN OR TO BE REPLANTED AS RECOMMENDED AND MAINTAINED BY MECHANICAL METHODS.
3. NATURAL GROUND LINE.
4. ADDITIONAL R/W FOR LANDSCAPING WILL BE PURCHASED ACCORDING TO THE APPROVED LANDSCAPE PLAN

TYPICAL SECTION ~ LEVEE CONTROLLED FLOODWAY

NO SCALE

PLATE 4



NOTES:

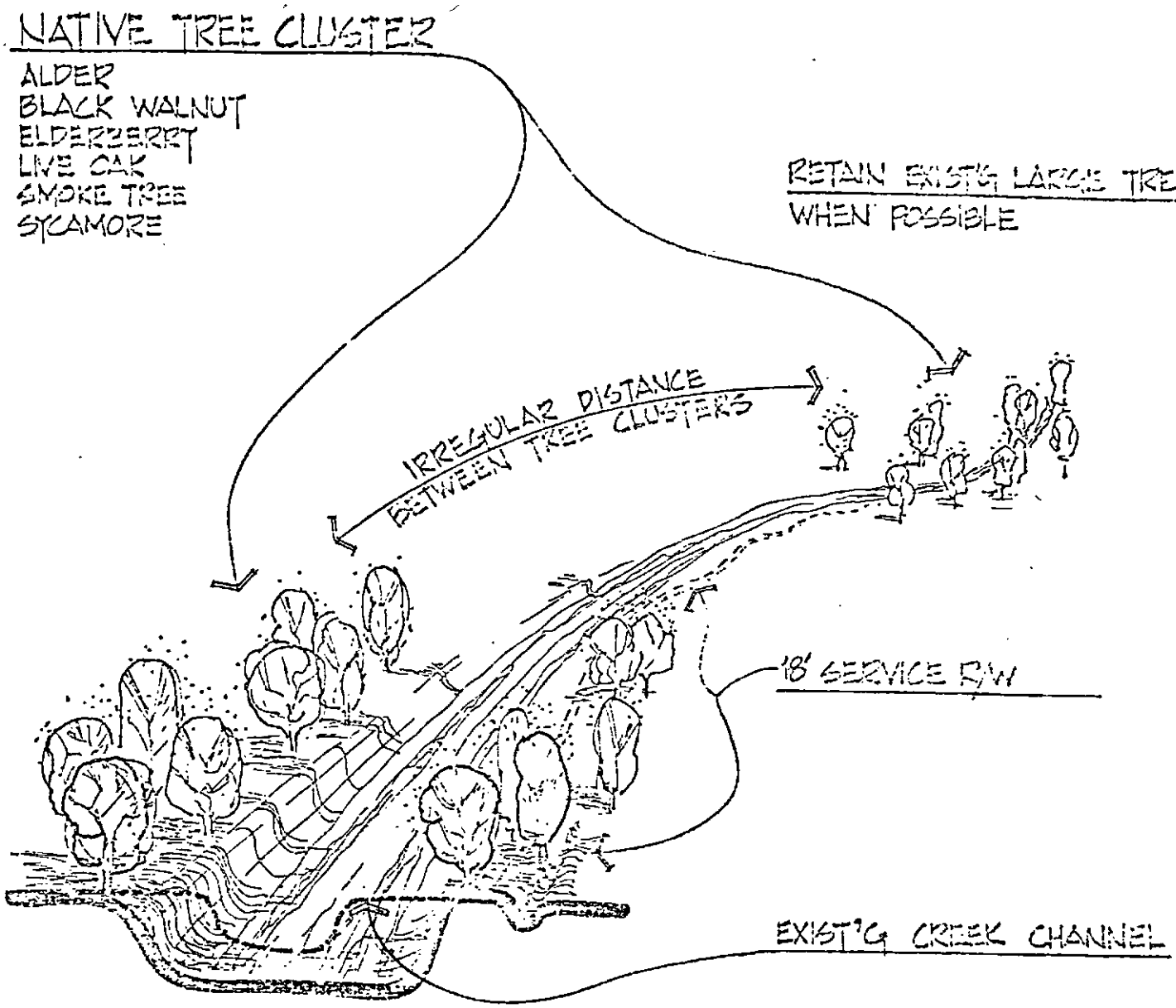
1. EXISTING TREES TO REMAIN OR TO BE REPLANTED AS RECOMMENDED IF REMOVAL IS REQUIRED TO PERMIT PASSAGE OF MAINTENANCE VEHICLES.
2. EXISTING BANK VEGETATION TO REMAIN AND TO BE MAINTAINED BY MECHANICAL METHODS.
3. CLEAR OVERBANK VEGETATION TO THE EXTENT NECESSARY FOR MAINTENANCE.
4. ADDITIONAL R/W FOR LANDSCAPING WILL BE PURCHASED ACCORDING TO THE APPROVED LANDSCAPING PLAN.

TYPICAL SECTION ~ NATURAL CREEK

NO SCALE

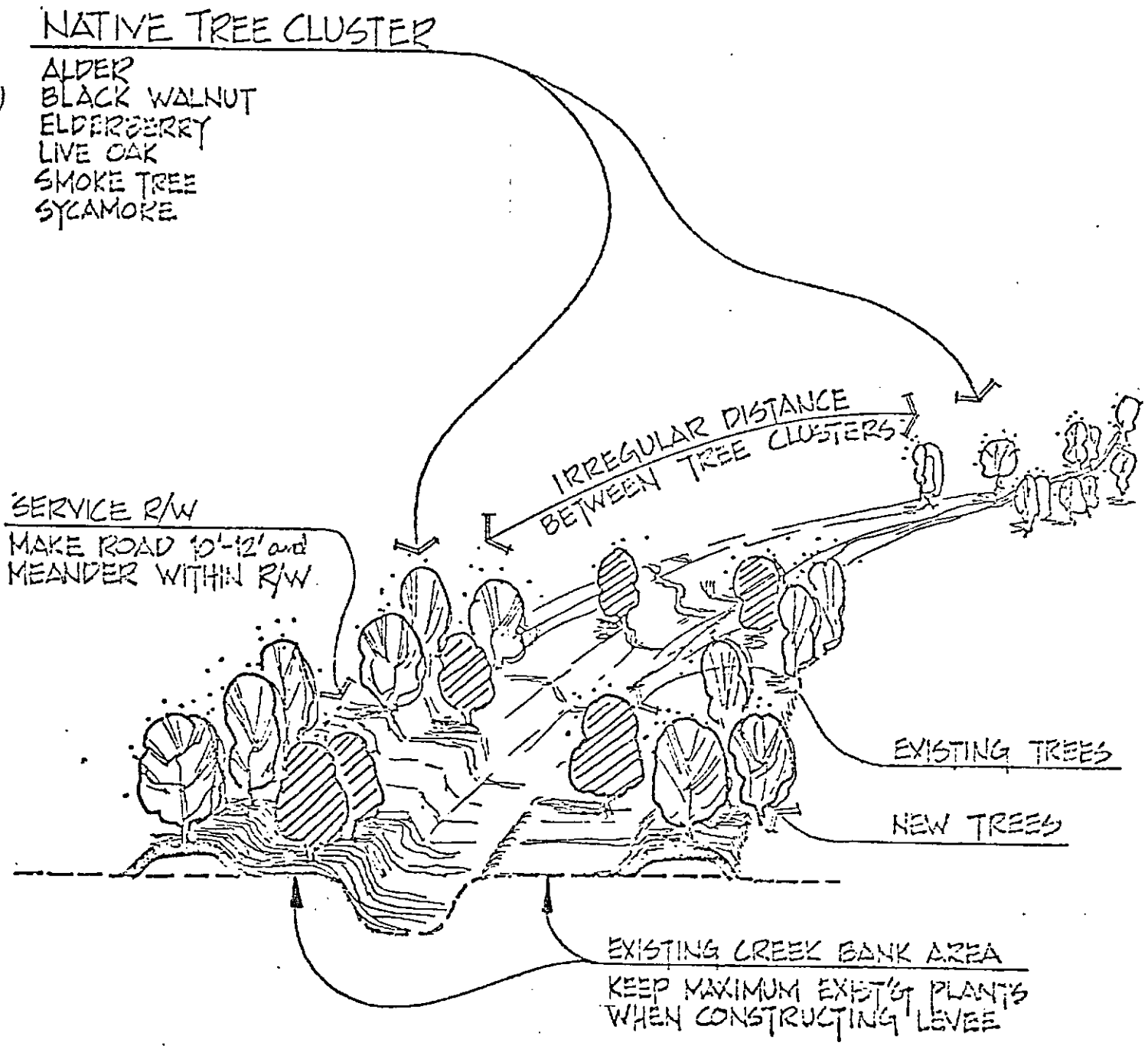
PLATE 5

PLATE 6



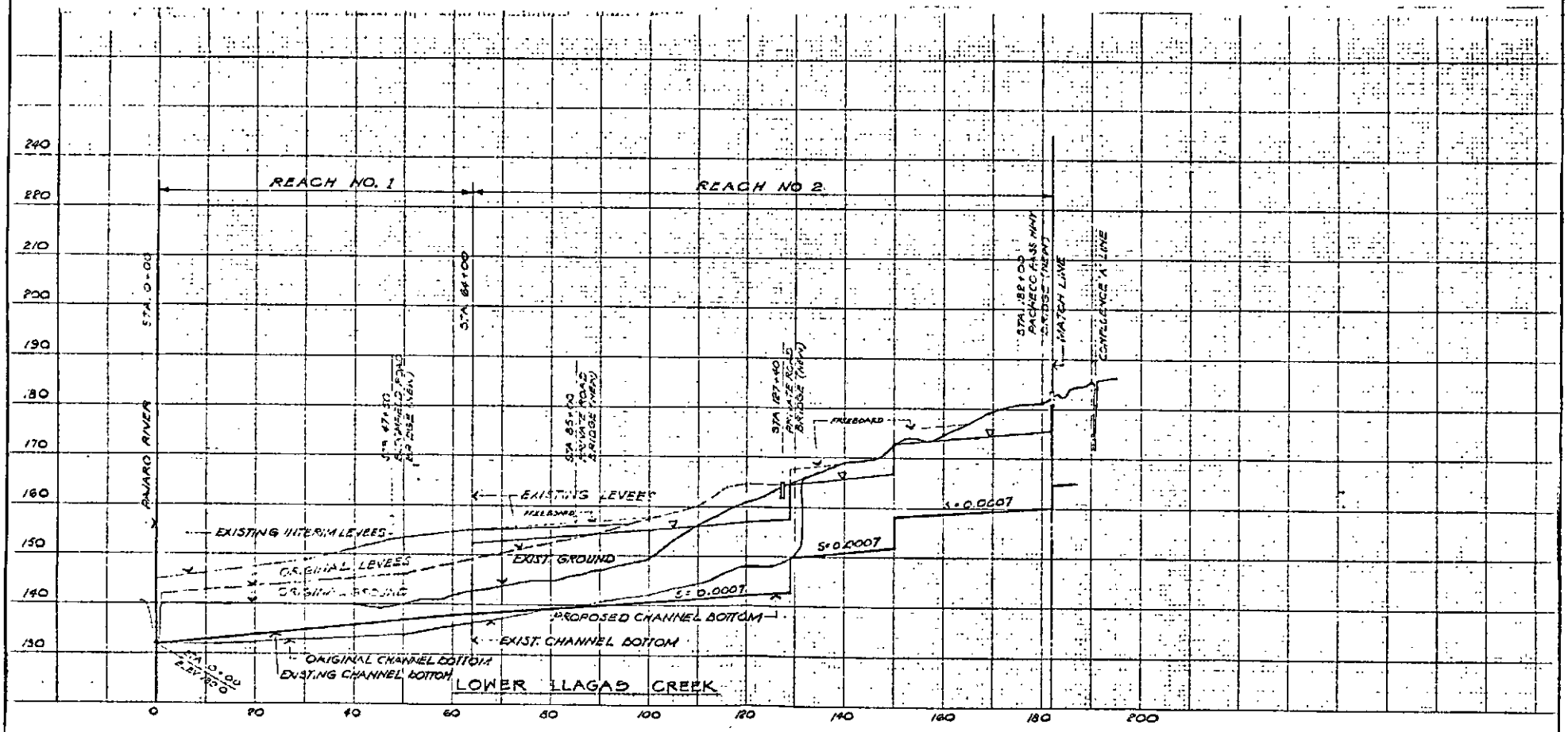
LANDSCAPE CONCEPT
EXCAVATED CHANNEL
LLAGAS CREEK

PLATE 7



LANDSCAPE CONCEPT
LEVEE CHANNEL
LLAGAS CREEK

PLATE 8



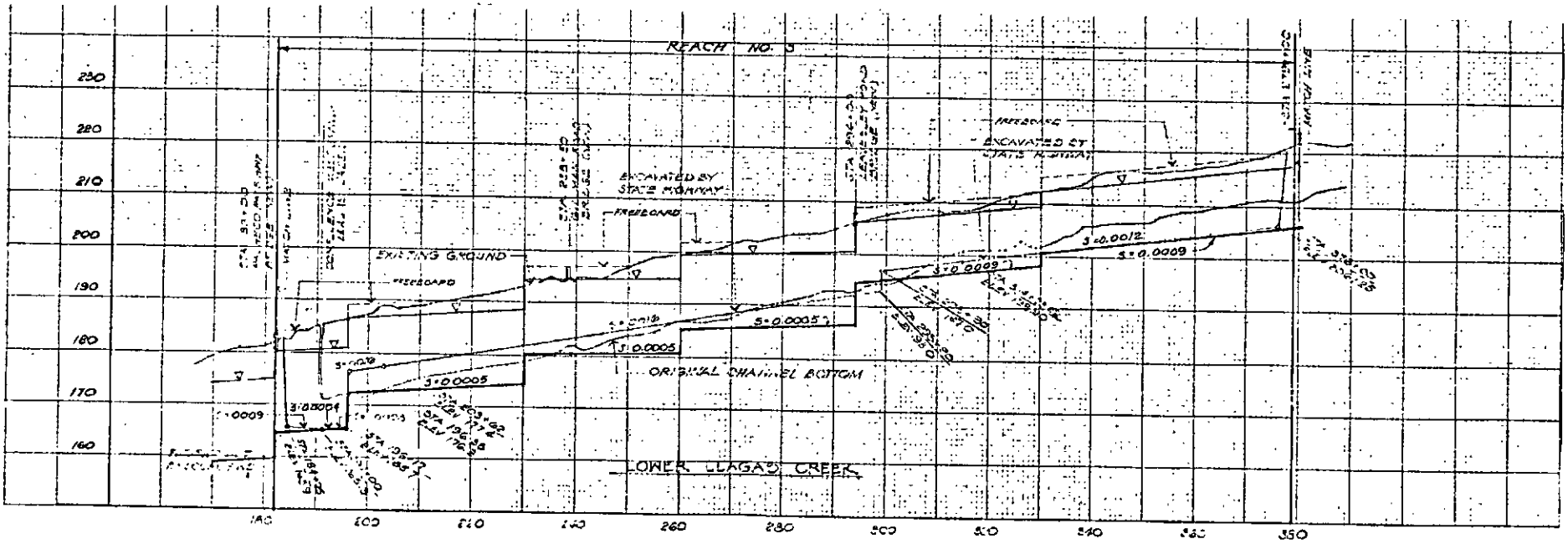
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 1 & 2

PLATE 9



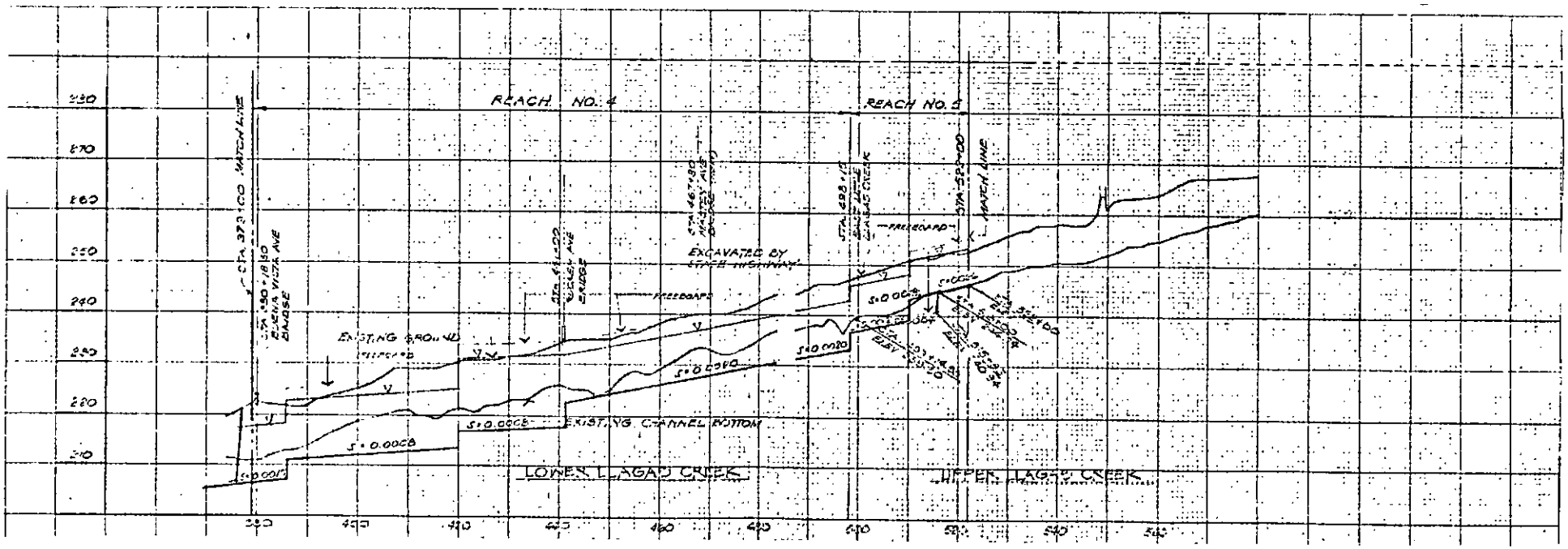
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 3

PLATE 10



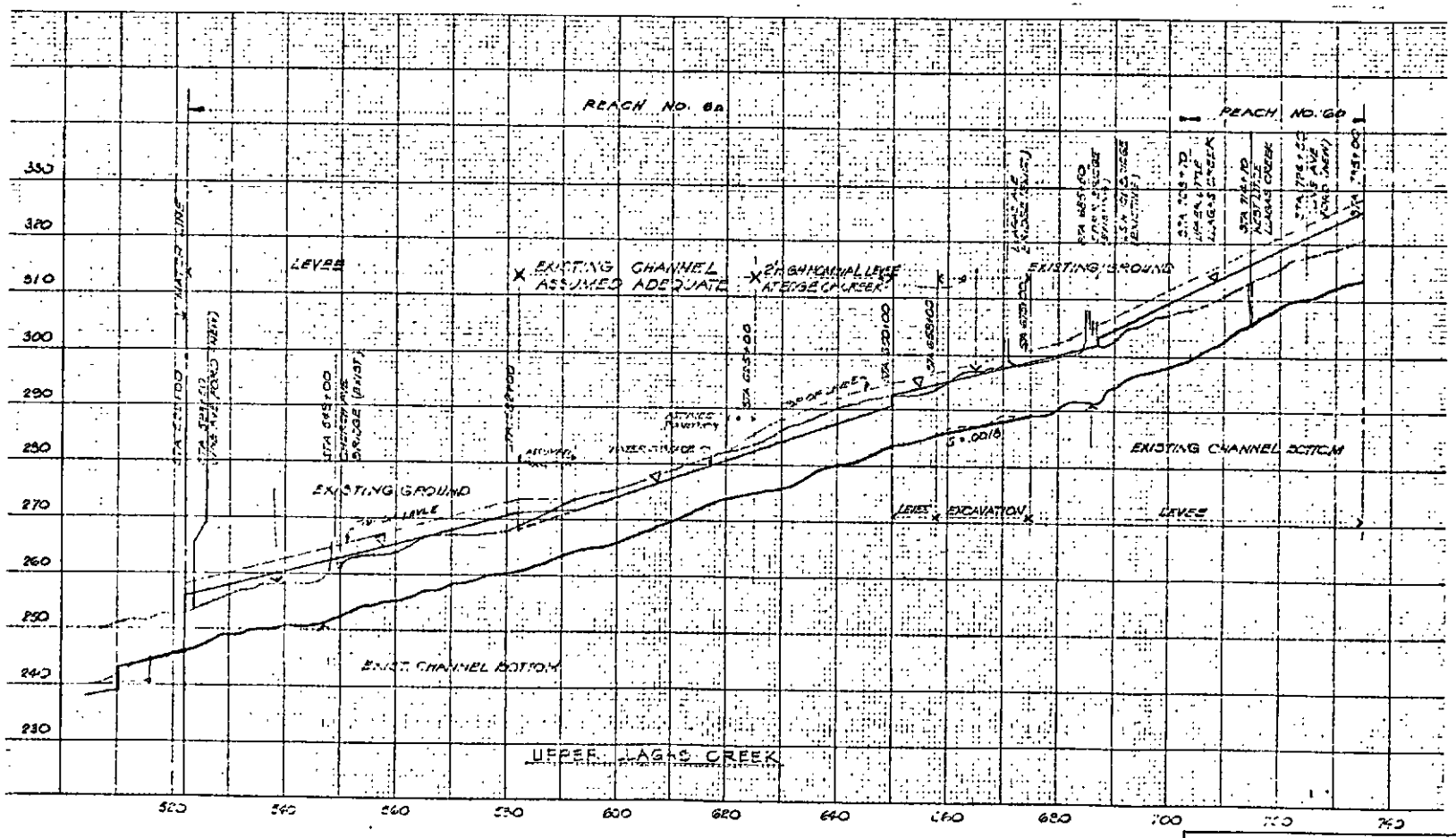
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 4 & 5

PLATE II



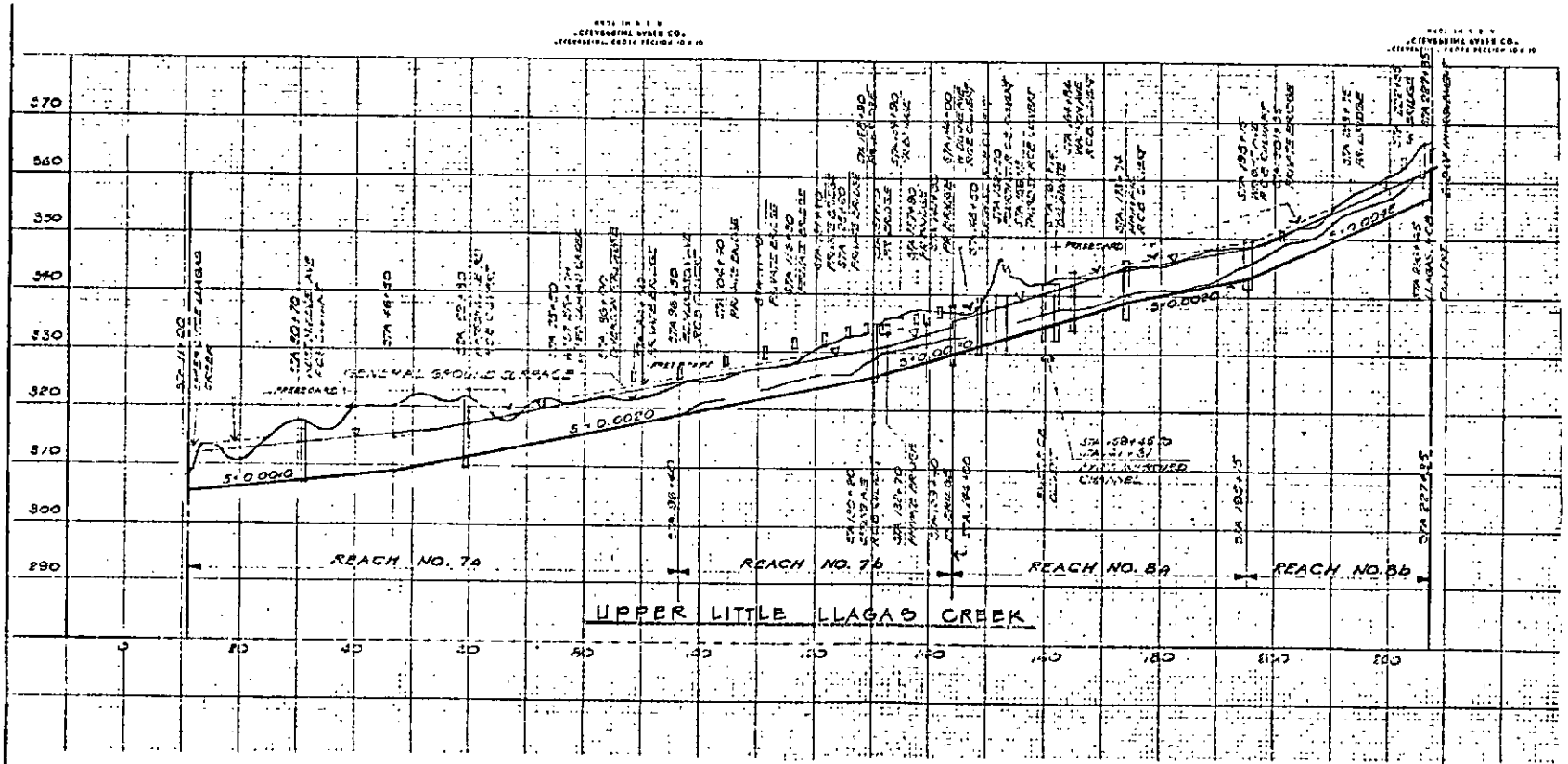
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 6a & 6b

PLATE 12



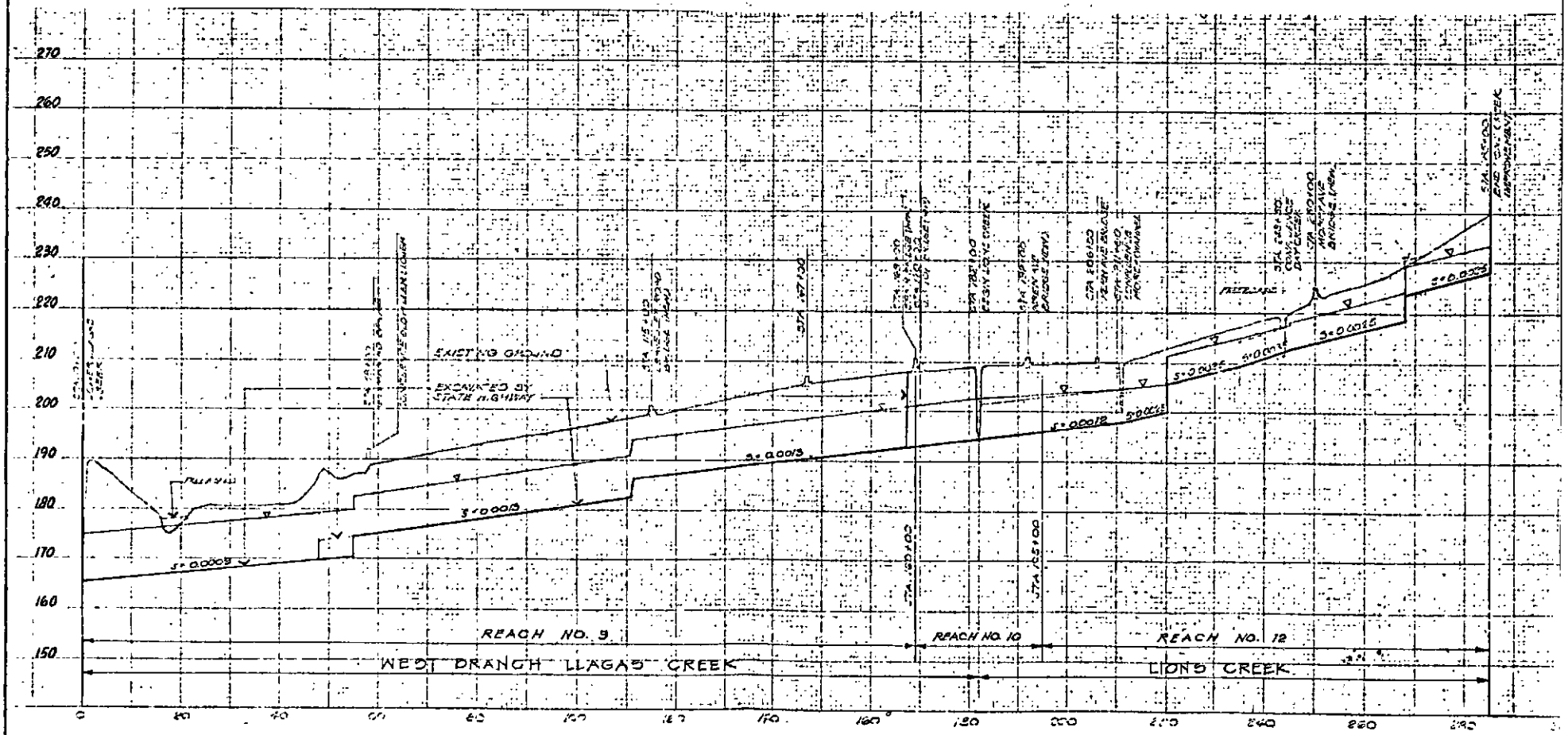
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 7a, 7b, 8a & 8b

PLATE 13



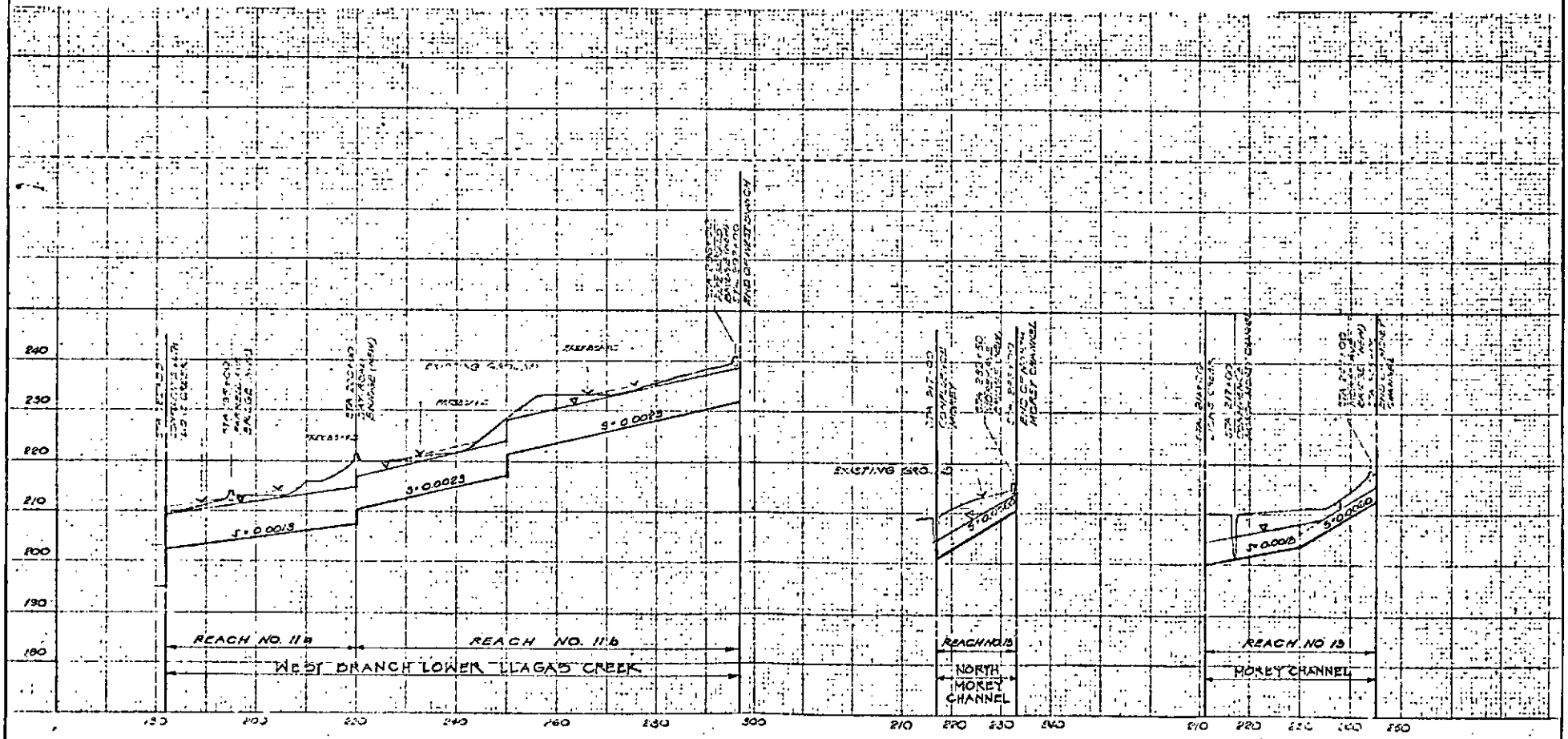
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 9, 10 & 12

PLATE 14



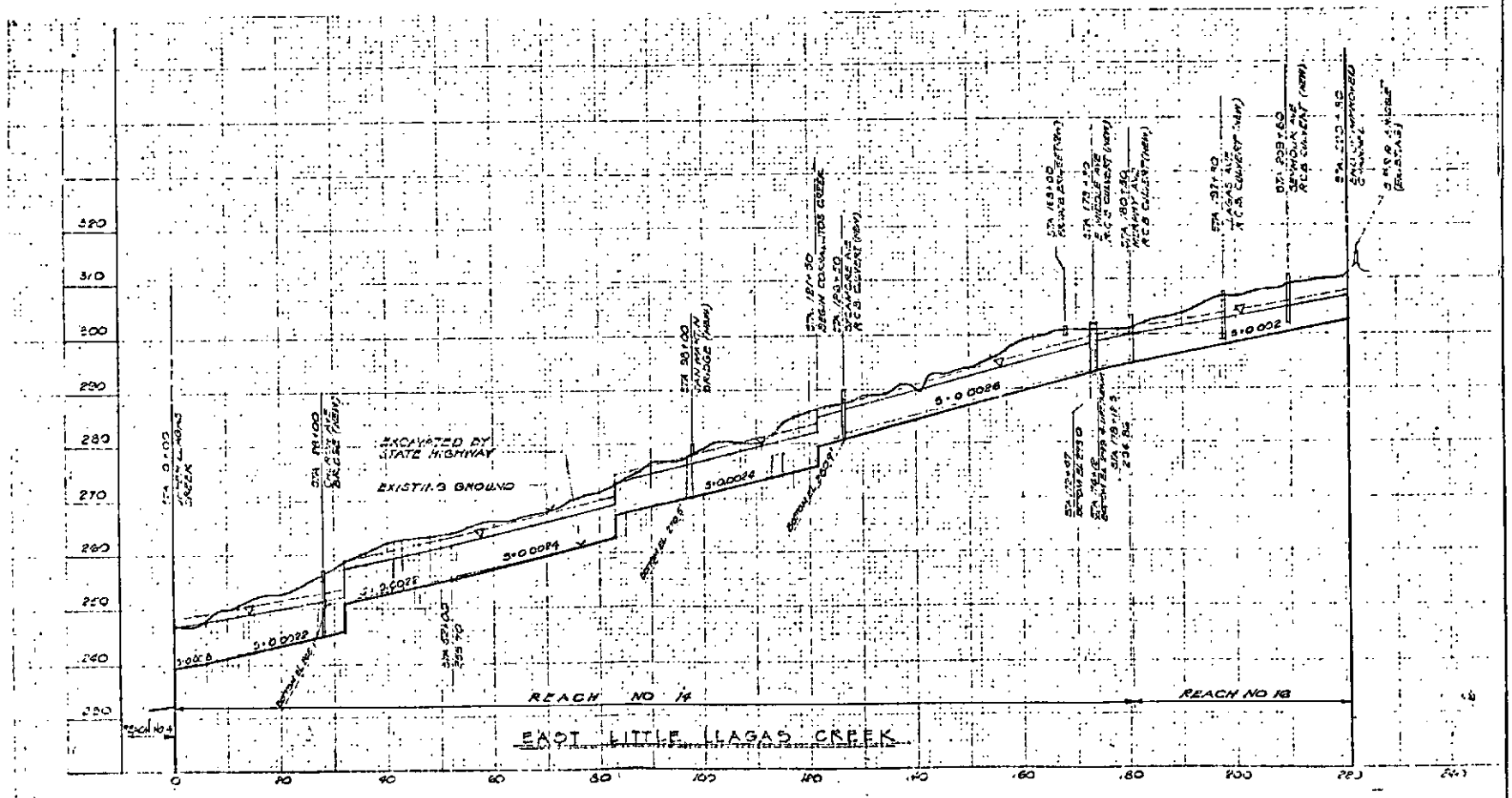
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 11a, 11b & 13

PLATE 15



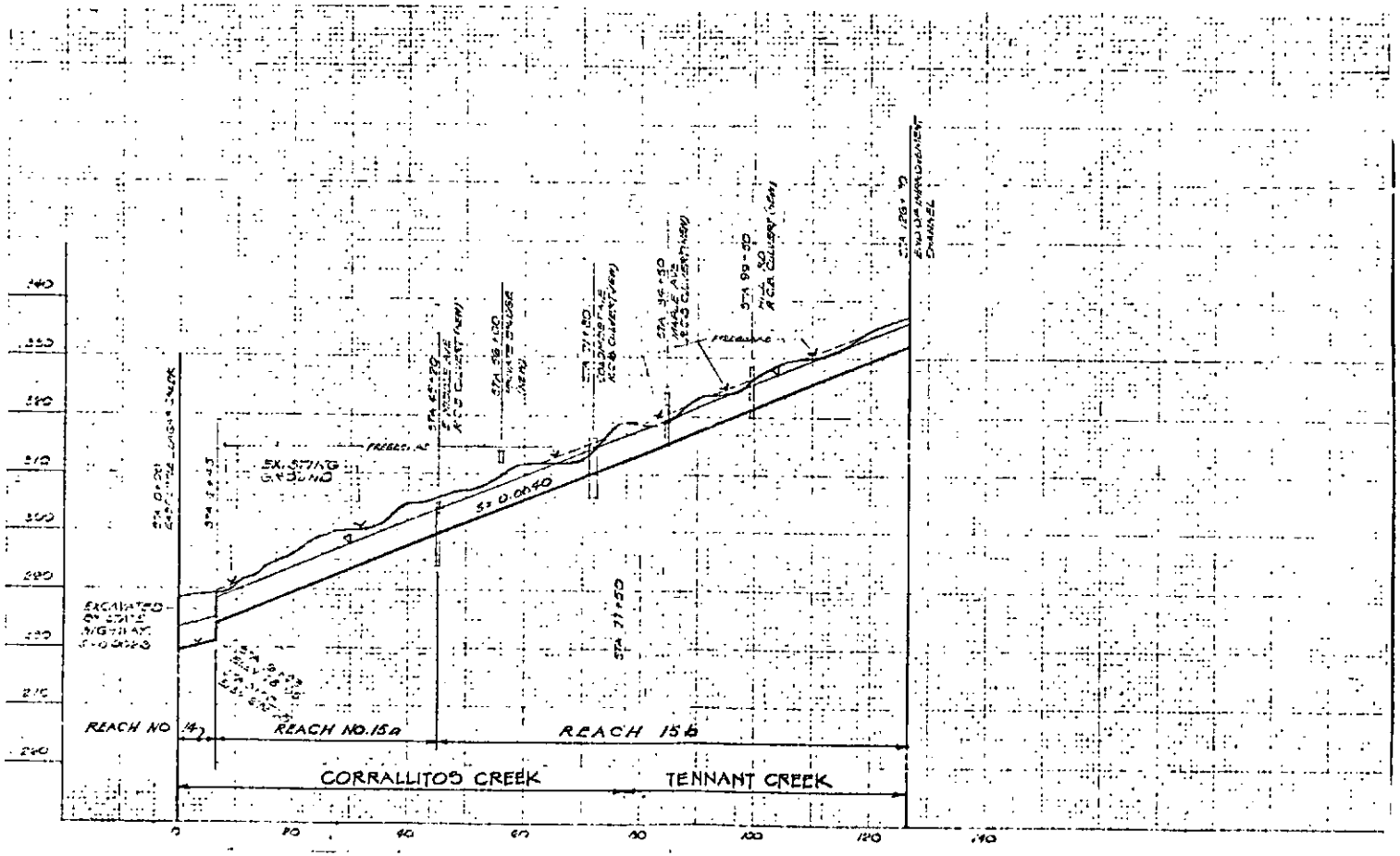
LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 14 & 16

PLATE 16



LLAGAS CREEK

WORK PLAN

REVISED PROFILE

REACH No. 14, 15a & 15b.

PLATE 17

LLAGAS CREEK - MODIFIED WORK PLAN

HYDRAULIC DESIGN SUMMARY

CHANNEL REACH NO.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C = COHESIVE NC = NON-COHESIVE	Q DESIGN CAPACITY (C.F.S.)	D_{75} (INCHES)	V (FT/SEC.)	a (FT^2)	SELECTED CHANNEL d (FT)	b (FT)	P	r	S	A	V	V/Vo
	LOWER LLAGAS CREEK														
1	0+00	30+00	C	10,000	—										
	30+00	47+50	C	14,000	—										
	47+50	64+00	C	18,900	—										
2	64+00	93+00	C	13,900	—	6.0	2,317	14.2	140	203	11.8	0.0007	2390	5.8	5.8
	93+00	121+00	C	17,100	—	6.0	2,850	15.2	155	223	12.6	0.0007	2820	6.1	—
	121+00	127+40	C	17,100	—	6.0	2,850	15.2	155	223	12.6	0.0007	2820	6.1	—
	127+40	150+00	C	16,300	—	6.0	2,717	15.0	150	217	12.4	0.0007	2700	6.0	—
	150+00	160+00	C	16,300	—	6.0	2,717	15.0	150	217	12.4	0.0007	2700	6.0	—
	160+00	182+00	N.C.	16,300	0.75	6.0	2,717	15.0	150	217	12.4	0.0007	2700	6.0	—
3	182+00	190+80	N.C.	16,300	0.75	4.65	3,505	15.5	190	259	13.2	0.0004	3430	4.7	4.5
	190+80	294+00	N.C.	10,100	1.00	5.4	2,020	14.2	120	183	11.5	0.0005	2110	4.9	4.6
	294+00	379+00	C.	9,300	—	6.0	1,550	11.5	120	171	9.5	0.0009	1630	5.7	—
4	379+00	386+00	C	9,300	—	6.0	1550	11.1	120	170	9.3	0.0010	1580	5.9	—
	386+00	420+00	N.C.	8,900	1.25	5.4	1648	11.5	120	171	9.6	0.0008	1650	4.5	5.2
	420+00	441+00	N.C.	8,900	0.50	3.8	2342	14.0	140	203	11.6	0.0003	2350	3.8	3.6
	441+00	458+00	N.C.	8,900	2.60	7.4	1202.7	9.2	110	152	7.8	0.0020	1180	7.5	7.1
	UPPER LLAGAS CREEK														
	458+00	498+15	NC	8,900	2.60	7.4	1202.7	9.2	110	152	7.8	0.0020	1180	7.5	7.1
5	498+15	513+00	N.C.	5,400	1.50	5.6	964	8.9	90	130	7.4	0.0012	960	5.6	4.6
	513+00	522+00	N.C.	5,400	2.00	6.4	844	7.9	90	125	6.7	0.0018	5345	6.4	5.2
6a	SEE SHEET 4														
6b	SEE SHEET 4														
	WEST LITTLE LLAGAS CREEK														
7a	11+00	46+50	N.C.	2,160	0.40	3.9	554	6.2	75	103	5.3	0.0010	540	4.0	3.9
	46+50	75+50	C	2,160	—	6	360	5.6	60	85	4.9	0.0020	399	5.5	—
	75+50	96+40	C.	1,680	—	6	280	5.4	50	74	4.4	0.0020	328	5.4	—

PLATE 18

LLAGAS CREEK - MODIFIED WORK PLAN

HYDRAULIC DESIGN SUMMARY

CHANNEL REACH NO.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C=COHESIVE NC=NONCOHESIVE	Q DESIGN CAPACITY (C.F.S.)	D_{75} (INCHES)	V (FT/SEC)	A (FT^2)	SELECTED CHANNEL d (FT)	b (FT)	P	r	S	A	V
	WEST LITTLE LLAGAS CREEK													
7b	96+40	130+20	C	1,470	—	6	245	5.0	50	72	4.2	0.0020	300	4.9
	130+20	144+00	C	1,300	—	6	216	4.2	50	69	3.6	0.0030	245	5.4
8a	144+00	173+94	C	1,300	CONCRETE	—	—	5.2	CONCRETE BOX 18	28	3.3	0.0030	94	14.0
	173+94	195+15	C	810	CONCRETE	—	—	5.0	CONCRETE BOX 16	26	3.1	0.0020	80	10.8
8b	195+15	204+00	C	510	CONCRETE			3.4	CONCRETE BOX 12	19	2.2	0.0045	41	12.8
	204+00	227+35	C	510		6	85	3.9	16	33	2.8	0.0045	93	5.7
	WEST BRANCH LLAGAS CREEK													
9	0+00	55+00	C	5,200		6	867	9.4	90	130	7.9	0.0009	1,023	5.1
	55+00	169+00	C	4,200		6	700	8.0	80	116	6.6	0.0013	768	5.4
10	169+00	182+00	C	4,200		6	700	8.0	80	116	6.6	0.0013	768	5.4
	LIONS CREEK													
10	182+00	195+00	C	2000		6	333	6.8	50	80	5.4	0.0012	432	4.6
	WEST BRANCH LLAGAS CREEK													
11a	182+00	220+00	C	2900		6	483	7.0	70	101	5.8	0.0013	588	5.0
11b	220+00	226+00	C	2,900		6	483	6.5	60	89	5.3	0.0023	474	6.1
	226+00	297+00	C	2,700		6	450	6.3	60	88	5.2	0.0023	448	6.0
	LIONS CREEK													
12	195+00	211+00	C	2,000		6	333	6.8	50	80	5.4	0.0012	432	4.6
	211+00	235+00	C	900		6	0	5.5	20	45	3.8	0.0025	171	5.2
	235+00	245+00	C	900		6	150	4.8	20	42	3.4	0.0035	142	5.7
	245+00	285+00	C	800		6	133	5.2	20	43	3.7	0.0025	159	5.0
	MOREY CHANNEL													
13	211+00	230+00	C	450		6	75	4.2	20	39	3.1	0.0018	119	3.8
	230+00	245+00	C	220		6	33	2.3	15	25	1.9	0.0060	47	5.0
	NORTH MOREY CHANNEL													

DMJM JOB NO. 6209-1-1

SHEET 2 OF 4

LLAGAS CREEK - MODIFIED WORK PLAN

HYDRAULIC DESIGN SUMMARY

CHANNEL REACH NO.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE C=COHESIVE N.C.=NONCOHESIVE	Q DESIGN CAPACITY (C.F.S.)	D75 (INCHES)	V (FT/SEC)	A (FT²)	SELECTED CHANNEL d (FT)	b (FT)	P	r	S	A	V
13	217+00	293+00	C	280		6	78	3.0	15	28.4	2.2	0.0060	55	5.6
	EAST LITTLE LLAGAS CREEK													
14	0+00	6+00	C	4,160		6	693	7.3	80	113	6.7	0.0018	691	6.0
	6+00	32+00	C	3,630		6	605	6.2	85	113	5.4	0.0022	603	6.1
	32+00	52+00	C	3,630		6	605	6.2	85	113	5.4	0.0022	603	6.1
	52+00	121+50	C	2,940		6	490	5.9	70	96	5.0	0.0024	483	6.1
	121+50	180+50	C	1,960		6	327	5.2	55	78	4.3	0.0026	340	5.8
	CORRALLITOS CREEK													
	0+00	6+45	C	1,440		6	240	3.9	55	72	3.3	0.0040	249	6.0
15A	6+45	10+00	C	1,440		6	240	3.9	55	72	3.3	0.0040	249	6.0
	10+00	45+20	C	1,440		6	240	3.9	55	72	3.3	0.0040	249	6.0
15B	45+20	77+50	C	1,440		6	240	3.9	55	72	3.3	0.0040	249	6.0
	TENNANT CREEK													
	77+50	126+70	C	640		6	107	3.7	25	42	2.9	0.0040	120	5.4
	EAST LITTLE LLAGAS CREEK													
16	180+50	220+85	C	660		6	110	4.2	30	49	3.3	0.0020	161	4.2

LLAG CREEK - MODIFIED WORK, LAN — HYDRAULIC DESIG. SUMMARY

REACH NO.	STATION DESIGNATIONS START	STATION DESIGNATIONS END	SOIL TYPE	Q DESIGN CAPACITY (CFS)	D75 (IN.)	V FT/SEC	a FT²	SELECTED CHANNEL — EXCAVATION d (FT)	b (FT)	p	r	S	LEVEE — EXIST. CHANNEL Qc	S	FLOODWAY df	n	Qf	Qn/df^8/3 S^1/2	f	H
	UPPER LLAGAS CREEK																			
6a	522+00	552+00	N.C.	5,400	2.00	6.4	844	—	—	—	—	—	3,100	0.0024	3	0.05	2,300	125.3	250	5
	552+00	580+00	N.C.	5,400	2.00	6.4	844	—	—	—	—	—	2,300	0.0024	3	0.05	3,100	168.9	340	5
	580+00	582+00	N.C.	5,100	2.00	EXISTING CHANNEL ADEQUATE							7,100	0.0036	EXIST. CHANNEL ADEQUATE					
	582+00	605+00	N.C.	5,100	2.00								7,100	0.0036						
	605+00	625+50	N.C.	5,100	2.00								6,500	0.0031						
	625+50	650+00	N.C.	5,100	2.00	6.4	797	—	—	—	—	—	5,000	0.0031	NOMINAL LEVEE AT EDGE OF EXISTING CREEK					
	650+00	658+50	N.C.	5,100	2.00	6.4	797	—	—	—	—	—	4,000	0.0032	2	0.05	1,100	153.08	200	4
	658+50	675+00	N.C.	5,100	2.00	6.4*	797	9	90	130	6.4	0.0018	3,000	0.0032	—	—	—	—	—	—
	675+00	687+00	N.C.	5,100	2.00	6.4*	797	9	90	130	6.4	0.0018	2,500	0.0033	—	—	—	—	—	—
	687+00	691+00	N.C.	5,100	2.00	6.4	797	—	—	—	—	—	3,100	0.0035	3	0.05	2,000	90.25	180	5
	691+00	703+70	N.C.	5,100	2.00	6.4	797	—	—	—	—	—	3,100	0.0035	3	0.05	2,000	90.25	180	5
6b	703+70	724+50	N.C.	3,430	2.00	6.4	536	—	—	—	—	—	5,000	0.0034	3	0.05	1,570	71.88	145	5
	724+50	735+00	N.C.	3,430	2.00	6.4	536	—	—	—	—	—	5,000	0.0034	3	0.05	1,570	71.88	145	5

* V_{10} FOR 10% CHANCE FLOOD = 5.1

NOTE:
FLOODWAY CAPACITY IS ADDED TO THE EXISTING CHANNEL CAPACITY.

PLATE 20

DMJM JOB NO. 6209-1-1 SHEET 4 OF 4

APPENDIX A

COMPUTATION SHEET
SCS-ENG-523 Rev. 8-69

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

STATE	PROJECT		
Calif	Upper Llagas - Chesbro Dam		
BY SRT / DATE 9.73	CHECKED BY / DATE	JOB NO.	
SUBJECT Cost Estimate (Rough Preliminary)		SHEET 1 OF 1	

With Box inlet Spillway - 72 hr General Storm

Item Description	Unit	Quantity	Unit Price	Extension
Diversion of streamflow & Dewater	Job	1	20,000	20,000
Clearing & Grubbing	Job	1	2,000	2,000
Abutment excavation (for spillway)	C.Y.	12,000	1.00	12,000
Embankment Excavation (for conduit)	C.Y.	110,000	0.50	55,000.
Earthfill - Embankment	C.Y.	377,000	0.75	283,000
Drainfill - Embankment	C.Y.	6,000	10.00	60,000
Rock Riprap - Emb facing	C.Y.	16,000	10.00	160,000
Structure Backfill	C.Y.	2,500	2.00	5,000
Reinforced Concrete Emergency Spillway - Including Reinf. Steel	C.Y.	4,500	150.00	675,000
Reinf. Concrete Cradle & Collars	C.Y.	160	150.00	24,000
Reinforcing Steel	lbs.	600,000	0.25	150,000
R/C Pressure Pipe - 42" dia.	Lin Ft.	700	110.00	77,000
Cement Grout - between existing & new conduit (materials & placing)	gal	10,500	1.00	10,500.
Dismantle existing valves and install at new location	Ea	3	2,000	6,000
Drain Pipe -	Lin Ft.	400	4.00	1,600
Misc - Metalwork, Piezometers Monuments & etc.	Job.	1	10,000	10,000
Sub total				1,551,100
≈ 10% Contingency.				148,900
Total.				1,700,000

OCT. 1974 ESTIMATE BY VALLEY WATER DIST.

RECEIVED
MAY 5 1976
DMJM Redwood City

REAL ESTATE COST ESTIMATE
RAISE CHESBRO AND ROAD RELOCATION

em		Cost
/	Buildings (and groups of buildings)	$696,000
)	Residences - relocation allowance	300,000
5	Tenant residences - relocation allowance	30,000
4	Farm - additional relocation allowance	40,000
1	Commercial establishment - relocation allowance	10,000
>	Acres of land (varying $3,000 - $7,500 per acre)	~~1,222,000~~ 1,344,000 [1]
	TOTAL	~~$2,298,000~~ 2,420,000 [1]

is cost estimate is based on mid-1974 land and improvement costs.

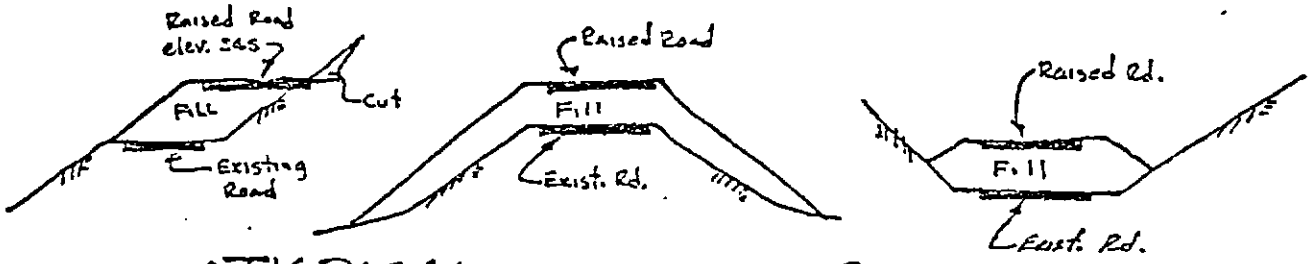
Road reloc. includes parts of Oak Glen Ave., Ivas Rd, and Willeeee Springs Rd.

[1] Revised per memo from J. Richardson, 4-23-76.

CJR

GWC 11/27/73

Oak Glen Avenue Raising at Chesbro Reservoir



TYPICAL SECTIONS

ITEMS OF CONSTRUCTION

1.	FILL (from SCS calculations to elevation 545)		
	240,000 cy @ $1.50/cy	—	$360,000
2.	FILL (use 10% for Willow Springs road raising)		
	24,000 cy @ $1.50/cy	—	36,000
2.	Soil Testing lump sum	—	10,000
3.	Pavement Placement (use 32' all paved Rd.)		
	3.5 miles x 5280'/mile x 32' wide x $0.75/sq ft.	—	444,000
4.	Culvert Extensions lump sum	—	25,000
	Sub Total 1	—	875,000
5.	Pavement Removal 10%	—	88,000
6.	Detours 10%	—	88,000
	Sub Total 2		1,051,000
	20% Contingencies	—	210,000
	TOTAL		$1,261,000

Unit Cost

$1,261,000 / 3.5 miles = $360,000/mile

APPENDIX B

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 2 Station 64 + 00 to Station 182 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	1,057,821	1.65 C.Y.	1,745,405
Compacted Embankment	39,014 CY	0.50 C.Y.	19,507.
Drop Structures	2701.4	200.00 C.Y.	540,280.
Drainage Inlets	12 EA	3,000.00 EA.	36,000.
Riprap	20,101	20.00 C.Y	402,020
Filter Stone	12,509	15.00 C.Y	187,635
Seeding	17.66	650.00 Ac.	11,479
Landscaping	-	L.S.	22,800
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$2,965,126
15% Contingency	444,769
TOTAL	$3,409,895

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LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 3 Station 182 + 00 to Station 379 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	534,346	1.65 C.Y.	882,496
Compacted Embankment	37,814	0.50 C.Y.	18,907
Drop Structures	5,471.2	200.00 C.Y.	1,094,240
Drainage Inlets	7 EA	3 000.00 EA.	21,000
Riprap	35,814	20.00 C.Y.	716,280
Filter Stone	26,450	15.00 C.Y.	396,750
Seeding	15.48	650.00 Ac.	10,062
Landscaping	-	L.S.	46,800
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 3,186,535
15% Contingency	477,980
TOTAL	$ 3,664,515

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 4 Station 379 + 00 to Station 498 + 15

Item	Quantity	Unit Cost	$
Channel Excavation	686,272	1.65 C.Y	1,132,349
Compacted Embankment	15,563 C.Y.	0.50 C.Y	7,781.
Drop Structures	2,472.3	200.00 C.Y.	494,460
Drainage Inlets	13 EA	3,000.00 EA	39,000.
Riprap	34,223	20.00 C.Y	684,460
Filter Stone	21,235	15.00 C.Y.	318,525
Seeding	1.86	650.00 Ac.	1209.
Landscaping	-	L.S.	34,800
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 2,712,584
15% Contingency	406,888
TOTAL	$ 3,119,472

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 5 Station 498 + 15 to Station 522 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	55,665	1.65 C.Y.	91,847
Compacted Embankment	5,427 C.Y.	0.50 C.Y.	2,713.50
Drop Structures	976	200.00 C.Y.	195,200
Drainage Inlets	2 EA	3,000.00 EA.	6,000.00
Riprap	5,877	20.00 C.Y.	117,540
Filter Stone	3,734	15.00 C.Y.	56,010
Seeding	0.14	650.00 C.Y.	91.00
Landscaping	-	L.S.	5,400
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 474,801
15% Contingency	71,220
TOTAL	$ 546,021

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 6A Station 522 + 00 to Station 703 + 70

Item	Quantity	Unit Cost	$
Channel Excavation	35593	1.65 C.Y.	58728
Compacted Embankment	5,541	0.50 C.Y.	2771
Drop Structures	0	200.00 C.Y.	-
Drainage Inlets	18 EA	3000.00 EA	54,000.00
Riprap	7,306	20.00 C.Y.	146,120
Filter Stone	4676	15.00 C.Y	70,140
Seeding	22.46	650.00 AC.	14,599.00
Landscaping	-	L.S.	30,600
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	88,675	1.25 C.Y.	110,844
Site Preparation (Levees)	16,470	3.00 L.F.	49,410.00

Subtotal $537,212

15% Contingency 80,582

TOTAL $617,794

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 66 Station 703 + 70 to Station 735 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	0	1.65 C.Y.	-
Compacted Embankment	0	0.50 C.Y.	-
Drop Structures	0	200.00 C.Y.	-
Drainage Inlets	3 EA	3,000.00 EA.	9,000.00
Riprap	0	20.00 C.Y.	-
Filter Stone	0	15.00 C.Y.	-
Seeding	5.10	650.00 AC.	3,315.00
Landscaping	-	L.S.	6,800
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	41,733	1.25 C.Y.	52,166.25
Site Preparation (Levees)	3,130	3.00 L.F.	9,390.00

Subtotal	$80,671
15% Contingency	12,101
TOTAL	$92,772

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 7A Station 11 + 00 to Station 96 + 40

Item	Quantity	Unit Cost	$
Channel Excavation	217,302	1.65 C.Y.	358,548
Compacted Embankment	13,054	0.50 C.Y.	6,527
Drop Structures	237	200.00 C.Y.	47,400
Drainage Inlets	10 EA	3 000.00 EA.	30,000.00
Riprap	8,997	20.00 C.Y.	179,940
Filter Stone	6,748	15.00 C.Y.	101,220
Seeding	6.46	650.00 AC.	4,199
Landscaping	-	L.S.	15,600
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 743,434
15% Contingency	111,515
TOTAL	$ 854,949

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 76 Station 96 + 40 to Station 144 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	71,586	1.65 C.Y	118,117
Compacted Embankment	3,982	0.50 C.Y	1,991
Drop Structures	0	200.00 C.Y.	—
Drainage Inlets	5 EA	3000.00 EA	15,000.00
Riprap	168	20.00 C.Y	3,360
Filter Stone	126	15.00 C.Y	1,890
Seeding	4.93	650.00 AC	3,205
Landscaping	—	L.S.	14,400
Structural Excavation	0	3.00 C.Y	—
Rectangular Concrete Channel	0	126.00 C.Y	—
Compacted Backfill	0	5.00 C.Y	—
Levee Embankment	0	125 C.Y	—
Site Preparation (Levees)	0	3.00 L.F.	—

Subtotal	$ 157,963
15% Contingency	23,694
TOTAL	$ 181,657

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 8a Station 144+00 to Station 195+15

Item	Quantity	Unit Cost	$
Channel Excavation	0	1.65 C.Y	-
Compacted Embankment	5457	0.50 C.Y	2,729
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	33 EA	3,000.00 EA	99,000.00
Riprap	0	20.00 C.Y	-
Filter Stone	0	15.00 C.Y	-
Seeding	0	650.00 Ac	-
Landscaping	-	L.S.	15,000
Structural Excavation	15,722	3.00 C.Y	47,166
Rectangular Concrete Channel	4309.2	126.00 C.Y	542,959
Compacted Backfill	5,156	5.00 C.Y	25780 00
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-
EQUIVALENT FEDERAL RECTANGULAR CHANNEL	467 x 7/45 =		67,715
	Subtotal		$ 800,349
	15% Contingency		120,052
	TOTAL		$ 920,401

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 2b Station 195+15 to Station 227+35

Item	Quantity	Unit Cost	$
Channel Excavation	14,359	1.65 C.Y.	23,742
Compacted Embankment	2,689	0.50 C.Y	1,345
Drop Structures	174.3	200.00 C.Y	34,860
Drainage Inlets	3	3,000.00 EA	9,000.
Riprap	147	20.00 C.Y	2,940
Filter Stone	110	15.00 C.Y	1,650
Seeding	2.17	650.00 Ac	1,411
Landscaping	—	L.S.	6,600
Structural Excavation	1,377	3.00 C.Y	4,131
Rectangular Concrete Channel	542	126.00 C.Y.	68,292
Compacted Backfill	912.3	5.00 C.Y	4561
Levee Embankment	0	1.25 C.Y	—
Site Preparation (Levees)	0	3.00 L.F.	—

Subtotal	$ 158,532
15% Contingency	23,780
TOTAL	$ 182,312

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 9 Station 0 + 00 to Station 169 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	314,277	1.65 C.Y	518,557
Compacted Embankment	1630 CY	0.50 C.Y	815
Drop Structures	976	200.00 C.Y.	195200
Drainage Inlets	17EA	3 000.00 EA	51,000
Riprap	474	20.00 C.Y.	9,480
Filter Stone	355	15.00 C.Y.	5,325
Seeding	31.35	650.00 Ac.	20378
Landscaping	-	L.S.	30,300
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F	-

Subtotal	$ 831,055
15% Contingency	124,658
TOTAL	$ 955,713

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 10 Station 169 + 00 to Station 195 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	137,222	1.65 C.Y	226,416
Compacted Embankment	0	0.50 C.Y.	-
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	1 EA	3 000.00 EA	3,000
Riprap	0	20.00 C.Y.	-
Filter Stone	0	15.00 C.Y	-
Seeding	36.11	650.00 Ac.	23,471
Landscaping	-	L.S.	8,100
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 260,937
15% Contingency	39,148
TOTAL	$ 300,135

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 11A Station 182+00 to Station 220+00

Item	Quantity	Unit Cost	$
Channel Excavation	101,025	1.65 C.Y	166,691
Compacted Embankment	3,111 C.Y	0.50 C.Y.	1,556
Drop Structures	270.1	200.00 C.Y.	54,020
Drainage Inlets	4 EA	3,000.00 EA	12,000
Riprap	205	20.00 C.Y.	4,100
Filter Stone	153	15.00 C.Y	2295
Seeding	4.62	650.00 Ac	3,003
Landscaping	-	L.S.	6,800
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 C.Y	-

Subtotal	$ 250,465
15% Contingency	37,570
TOTAL	$ 288,035

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 116 Station 220+00 to Station 297+00

Item	Quantity	Unit Cost	$
Channel Excavation	175,884	1.65 C.Y.	290,209
Compacted Embankment	4,186 c.y.	0.50 C.Y.	2,093
Drop Structures	540.2	200.00 C.Y.	108,040
Drainage Inlets	8 EA	3,000.00 EA	24,000
Riprap	192	20.00 C.Y.	3,840
Filter Stone	144	15.00 C.Y.	2,160
Seeding	9.07	650.00 Ac.	5,896
Landscaping	-	L.S.	8,400
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 444,638
15% Contingency	66,696
TOTAL	$ 511,334

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 12 Station 195 + 00 to Station 285 + 00

Item	Quantity	Unit Cost	$
Channel Excavation	160,330	1.65 C.Y	264,545
Compacted Embankment	519 CY.	0.50 C.Y	260
Drop Structures	348.6	200.00 C.Y	69,720
Drainage Inlets	9 EA	3,000.00 EA	27,000
Riprap	348	20.00 C.Y	6,960
Filter Stone	260	15.00 C.Y	3,900
Seeding	12.97	650.00 AC.	8,431
Landscaping	—	L.S.	7,500
Structural Excavation	0	3.00 C.Y	—
Rectangular Concrete Channel	0	126.00 C.Y	—
Compacted Backfill	0	5.00 C.Y	—
Levee Embankment	0	1.25 C.Y	—
Site Preparation (Levees)	0	3.00 L.F	—

Subtotal	$ 338,316
15% Contingency	58,247
TOTAL	$ 446,563

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 135 Station 211+00 to Station 245+00

Item	Quantity	Unit Cost	$
Channel Excavation	26,456	1.65 C.Y	43652
Compacted Embankment	0	0.50 C.Y	-
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	3 EA	3 000.00 EA	9,000
Riprap	0	20.00 C.Y	-
Filter Stone	0	15.00 C.Y	-
Seeding	3.89	650.00 C.Y	2,529
Landscaping	-	L.S.	1,700
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 L.F	-

Subtotal	$ 56,881
15% Contingency	8,532
TOTAL	$ 65,413

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 13N Station 217+00 to Station 233+00

Item	Quantity	Unit Cost	$
Channel Excavation	10,401	1.65 C.Y.	17,162
Compacted Embankment	0	0.50 C.Y.	-
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	3 EA	3 000.00 EA.	9,000
Riprap	153	20.00 C.Y	3,060
Filter Stone	115	15.00 C.Y	1,725
Seeding	1.37	650.00 Ac	891
Landscaping	-	L.S.	1,600
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 33,438
15% Contingency	5,016
TOTAL	$ 38,454

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 14 Station 0+00 / 0+00 to Station 120+50 / 6+45 EAST LITTLE LLAGAS CORRALLITOS

Item	Quantity	Unit Cost	$
Channel Excavation	150,439	1.65 C.Y.	248,224
Compacted Embankment	3,725	0.50 C.Y.	1,863
Drop Structures	1,516	200.00 C.Y.	303,200
Drainage Inlets	20 EA	3,000.00 EA	60,000
Riprap	730	20.00 C.Y.	14,600
Filter Stone	549	15.00 C.Y.	8,235
Seeding	23.29	650.00 A.C.	15,139
Landscaping	-	L.S.	34,200
Structural Excavation	0	3.00 C.Y.	-
Rectangular Concrete Channel	0	126.00 C.Y.	-
Compacted Backfill	0	5.00 C.Y.	-
Levee Embankment	0	1.25 C.Y.	-
Site Preparation (Levees)	0	3.00 L.F	-

Subtotal	$ 685,461
15% Contingency	102,819
TOTAL	$ 788,280

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 15A Station 6+45 to Station 45+20

Item	Quantity	Unit Cost	$
Channel Excavation	47,935	1.65 C.Y	79,093
Compacted Embankment	444	0.50 C.Y	222
Drop Structures	174.3	200.00 C.Y	348,600
Drainage Inlets	4 EA	3,000.00 EA	12,000
Riprap	0	20.00 C.Y	-
Filter Stone	0	15.00 C.Y	-
Seeding	413	650.00 Ac.	2685
Landscaping	-	L.S.	5,900
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$	448,500
15% Contingency		67,275
TOTAL	$	515,775

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 156 Station 45 + 20 to Station 126 + 70

Item	Quantity	Unit Cost	$
Channel Excavation	55,107	1.65 C.Y	90,927
Compacted Embankment	7,093	0.50 C.Y	3,547
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	3 EA.	3 000.00 EA.	9,000
Riprap	0	20.00 C.Y.	-
Filter Stone	0	15.00 C.Y	-
Seeding	9.99	650.00 AC.	6,494
Landscaping	-	L.S.	9,300
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 119,268
15% Contingency	17,890
TOTAL	$ 137,158

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF CHANNEL COSTS

REACH NO. 16 Station 120+50 to Station 220+85

Item	Quantity	Unit Cost	$
Channel Excavation	46029	1.65 C.Y	75948
Compacted Embankment	1852 c.y.	0.50 C.Y.	926
Drop Structures	0	200.00 C.Y	-
Drainage Inlets	4 EA	3 000.00 EA	12,000
Riprap	0	20.00 C.Y	-
Filter Stone	0	15.00 C.Y	-
Seeding	4.91	650.00 Ac.	3192
Landscaping	-	L.S.	4,500
Structural Excavation	0	3.00 C.Y	-
Rectangular Concrete Channel	0	126.00 C.Y	-
Compacted Backfill	0	5.00 C.Y	-
Levee Embankment	0	1.25 C.Y	-
Site Preparation (Levees)	0	3.00 L.F.	-

Subtotal	$ 96,566
15% Contingency	14,485
TOTAL	$ 111,051

APPENDIX C

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 2 Station 64 + 00 to Station 182 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	6,720 SF	24.00	161,300
Private Bridges	4,060 SF	12.50	50,800
Barbed Wire Fence	23,600 LF	2.20	51,900
Relocation of Utilities			9,800
		Subtotal	273,800
		15% Contingency	41,100
		TOTAL	314,900

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	21.07 Ac	100.00	2,100
Agricultural	53.70 Ac	3,500.00	188,000
Potential Residential (Low Value)			
Potential Residential (Medium Value)			
Residential/School			
Landscaping Addition	5.42 Ac	3,500.00	19,000
		TOTAL	209,100

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 3 Station 182 + 00 to Station 379 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	16,128	24.00	387,100
Private Bridges			
Barbed Wire Fence	39,400 -F	2.20	86,700
Relocation of Utilities			66,300
		Subtotal	540,100
		15% Contingency	81,000
		TOTAL	621,100

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom			
Agricultural	110.36 Ac	3,500.00	386,300
Potential Residential (Low Value)			
Potential Residential (Medium Value)			
Landscape Addition	9.04 Ac.	3,500.00	31,600
Dwellings	1 Ea	25,000.00	25,000
		TOTAL	442,900

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 5 Station 458 + 00 to Station 522 + 00

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges			
Barbed Wire Fence	12,300 L.F.	2.20	25,200
Relocation of Utilities			500
		Subtotal	28,700
		15% Contingency	4,300
		TOTAL	33,000

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	3.67 Ac	100.00	400
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	6.87 Ac	10,000.00	62,700
Landscaping Addition	1.10 Ac.	10,000.00	11,000
Dwellings			
		TOTAL	80,100

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 6A Station 522 + 00 to Station 703 + 70

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges			
Barbed Wire Fence	36,340 LF	2.20	79,900
Relocation of Utilities			4,400
		Subtotal	84,300
		15% Contingency	12,600
		TOTAL	96,900

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	44.76 Ac	100.00	4,500
Agricultural			
Landscaping Addition	8.34 Ac.	10,000.00	83,400
Potential Residential (Medium Value)	53.09 Ac	10,000.00	530,900
Industrial	3.93 Ac	20,000.00	78,600
Business	1 Ea	50,000	50,000
		TOTAL	747,400

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 6B Station 703 + 70 to Station 735 + 00

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges			
Barbed Wire Fence	6,260 L.F	2.20	13,800
Relocation of Utilities			
Subtotal			13,800
15% Contingency			2,100
TOTAL			15,900

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	4.22 Ac	100.00	400
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	12.53 Ac.	10,000.00	125,300
Landscaping Addition	1.44 Ac.	10,000.00	14,400
Dwellings			
TOTAL			140,100

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 7A Station 11 + 00 to Station 96 + 40

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges	700 SF.	12.50	8,800
RCB Culverts	317 C.Y.	145.00	46,000
Barbed Wire Fence	17,080 L.F	2.20	37,600
		Subtotal	92,400
		15% Contingency	13,900
		TOTAL	106,300

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom			
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	30.07 Ac	10,000.00	300,700
Landscaping Addition	3.92 Ac.	10,000.00	39,200
Dwellings	1 Ea	25,000.00	25,000
		TOTAL	364,900

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 7B Station 96 + 40 to Station 144 + 00

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges	8,400 S.F.	12.50	105,000
RCB Culverts	162 C.Y.	145.00	23,500
Relocation of Utilities	9,520 L.F.	2.20	20,900
		Subtotal	149,400
		15% Contingency	22,400
		TOTAL	171,800

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.94	100.00	200
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	13.02 Ac	10,000.00	130,200
Landscaping Addition	2.19 Ac.	10,000.00	21,900
Dwellings	2 Ea	25,000.00	50,000
		TOTAL	202,300

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 8A Station 144 +00 to Station 195 + 15

Item	Quantity	Unit Cost	$
Chain Link Fence	10,230 L.F.	4.00	40,900
Private Bridges			
RCB Culverts	344 C.Y.	145.00	49,900
Relocation of Utilities			
		Subtotal	90,800
		15% Contingency	13,600
		TOTAL	104,400

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.17 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Landscaping Additional	2.35 Ac.	13,000.00	30,600
Residential/School	3.78 Ac.	13,000.00	49,100
Dwellings	1 Ea.	25,000.00	25,000
		TOTAL	104,800

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 8B Station 195 + 15 to Station 227 + 35

Item	Quantity	Unit Cost	$
Chain Link Fence	1,770 L.F.	4.00	7,100
Private Bridges	480 S.F.	12.50	6,000
RCB Culverts	57 C.Y.	145.00	8,300
Barbed Wire Fence	4,670 L.F.	2.20	10,300
		Subtotal	31,700
		15% Contingency	4,800
		TOTAL	36,500

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	0.46 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Landscaping Additional	1.48 Ac.	13,000.00	19,200
Residential/School	5.65 Ac	13,000.00	73,500
Dwellings			
		TOTAL	92,800

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 9 Station 0 + 00 to Station 169 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	3,584 S.F.	24.00	86,000
R. R. Bridge	112 L.F.	300.00	33,600
Barbed Wire Fence	33,800 L.F.	2.20	74,400
Relocation of Utilities			28,800
		Subtotal	222,800
		15% Contingency	33,400
		TOTAL	256,200

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	2.58 Ac	100.00	300
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	69.03 Ac	10,000.00	690,300
Landscaping Addition	7.76 Ac.	10,000.00	77,600
Dwellings			
		TOTAL	768,200

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 10 Station 169 + ____ to Station 195 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	13,888 S.F.	24.00	333,300
Private Bridges			
Barbed Wire Fence	5,200 L.F.	2.20	11,400
Relocation of Utilities			800
		Subtotal	345,500
		15% Contingency	51,800
		TOTAL	397,300

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	—	-	
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	9.72 Ac	10,000.00	97,200
Landscaping Addition	1.19 Ac.	10,000.00	11,900
Dwellings	1 Ea	25,000.00	25,000
		TOTAL	134,100

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 11A Station 182 + 00 to Station 220 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	6,272 S.F.	24.00	150,500
Private Bridges			
Barbed Wire Fence	7,600 L.F.	2.20	16,700
Relocation of Utilities			800
		Subtotal	168,000
		15% Contingency	25,200
		TOTAL	193,200

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.31 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	13.17 Ac	10,000.00	131,700
Landscaping Addition	1.74 Ac.	10,000.00	17,400
Dwellings	2 Ea	25,000.00	50,000
		TOTAL	199,200

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 11B Station 220 + 00 to Station 297 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	2,688 S.F.	24.00	64,500
Private Bridges			
Barbed Wire Fence	15,400 L.F.	2.20	33,900
Relocation of Utilities			
Subtotal			98,400
15% Contingency			14,800
TOTAL			113,200

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.38 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	25.55 Ac	8,000.00	204,400
Landscaping Addition	3.54 Ac.	8,000.00	28,300
Dwellings	2 Ea	25,000.00	50,000
TOTAL			282,800

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 12 Station 195 + 00 to Station 285 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	4,096 S.F.	24.00	98,300
Private Bridges			
Barbed Wire Fence	18,000 L.F.	2.20	39,600
Relocation of Utilities			800
		Subtotal	138,700
		15% Contingency	20,800
		TOTAL	159,500

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	2.41 Ac	100.00	200
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	21.52 Ac.	10,000.00	215,200
Landscaping Addition	4.13 Ac.	10,000.00	41,300
Dwellings			
		TOTAL	256,700

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 135 Station 211 + 00 to Station 245 + 00

Item	Quantity	Unit Cost	$
State and County Bridges	2,688 S.F.	24.00	64,500
Private Bridges			
Barbed Wire Fence	6,800 L.F.	2.20	15,000
Relocation of Utilities			
Subtotal			79,500
15% Contingency			11,900
TOTAL			91,400

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.03 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	6.64 Ac	10,000.00	66,400
Landscaping Addition	1.56 Ac	10,000.00	15,600
Dwellings			
TOTAL			82,100

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 13N Station 217 + 00 to Station 233 + 00

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges			
Barbed Wire Fence	3,200 L.F.	2.20	7,000
Relocation of Utilities			
Subtotal			7,000
15% Contingency			1,100
TOTAL			8,100

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	—	—	
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	3.49 Ac	10,000.00	34,900
Landscaping Addition	0.73 Ac.	10,000.00	7,300
Dwellings			
TOTAL			42,200

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 14 Station 0 + 00 to Station 120 + 50 East Little Llagas
0 + 00 6 + 45 Corralitos

Item	Quantity	Unit Cost	$
State and County Bridges			
Private Bridges	840 S.F.	12.50	10,500
RCB Culverts	954 C.Y.	145.00	138,300
Relocation of Utilities			5,500
Barbed Wire Fence	37,390 L.F.	2.20	82,300
Subtotal			236,600
15% Contingency			35,500
TOTAL			272,100

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	5.05 Ac	100.00	500
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	63.34 Ac	10,000.00	633,400
Landscaping Addition	8.58 Ac	10,000.00	85,800
Dwellings			
TOTAL			719,700

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 15A Station 6 + 45 to Station 45 + 20

Item	Quantity	Unit Cost	$
State and County Bridges			
Barbed Wire Fence	7,750	2.20	17,100
RCB Culverts	136 C.Y.	145.00	19,700
Relocation of Utilities			400
		Subtotal	37,200
		15% Contingency	5,600
		TOTAL	42,800

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	0.95 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	11.41 Ac	10,000.00	114,100
Landscape Addition	1.78 Ac.	10,000.00	17,800
Dwellings			
		TOTAL	132,000

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 15B Station 45 + 20 to Station 77 + 50

Item	Quantity	Unit Cost	$
Barbed Wire Fence	16,300 L.F.	2.20	35,900
Private Bridges	840 S.F.	12.50	10,500
RCB Culverts	569 C.Y.	145.00	82,500
Relocation of Utilities			1,500
		Subtotal	130,400
		15% Contingency	19,600
		TOTAL	150,000

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.58 Ac	100.00	200
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	21.04 Ac	10,000.00	210,400
Landscape Addition	3.74 Ac.	10,000.00	37,400
Dwellings			
		TOTAL	248,000

LLAGAS CREEK - MODIFIED WORK PLAN

ESTIMATE OF OTHER CONSTRUCTION COSTS

REACH NO. 16 Station 180 + 50 to Station 220 + 85

Item	Quantity	Unit Cost	$
State and County Bridges			
Barbed Wire Fence	8,070 L.F.		17,800
RCB Culverts	130 C.Y.	145.00	18,900
Relocation of Utilities			
		Subtotal	36,700
		15% Contingency	5,500
		TOTAL	42,200

ESTIMATED COST OF LAND PURCHASE

Item	Quantity	Unit Cost	$
Creek Bottom	1.29 Ac	100.00	100
Agricultural			
Potential Residential (Low Value)			
Potential Residential (Medium Value)	9.27 Ac	10,000.00	92,700
Landscape Addition	1.85 Ac.	10,000.00	18,500
Dwellings			
		TOTAL	111,300

APPENDIX D

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LLAGAS CREEK R/W.

SELECTED ALTERNATE

JOB NO. 6209-1-1 | SHEET NO. 1 OF 5

DESIGNED BY M.S | DATE MAY 27, 1976

APPROVED

REACH Nº	STATION BEGIN	STATION END	LENGTH	b or f	d or H	W	GROSS ACRES
	LOWER LLAGAS CREEK						
2	64+00	93+00	2900'	140'	14'	264'	17.53
	93+00	121+00	2800'	155'	15'	283'	18.19
	121+00	127+40	640'	155'	15'	283'	4.16
	127+40	150+00	2260'	150'	15'	278'	14.42
	150+00	160+00	1000'	150'	15'	278'	6.38
	160+00	182+00	2200'	150'	15'	278'	14.04
							74.77
3	182+00	190+80	880'	190'	16'	322'	6.51
	190+80	294+00	10320'	120'	14'	244'	57.80
	294+00	379+00	8500'	120'	12'	236'	46.05
							110.36
4	379+00	386+00	700'	120'	11'	232'	3.72
	386+00	420+00	3400'	120'	12'	236'	18.42
	420+00	441+00	2100'	140'	14'	264'	12.73
	441+00	458+00	1700'	110'	9'	214'	8.35
							43.22
	UPPER LLAGAS CREEK						
	458+00	498+15	4015'	110'	9'	214'	19.72
5	498+15	513+00	1485'	90'	9'	194'	6.61
	513+00	522+00	900'	90'	8'	190'	3.93
							10.54

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LLAGAS CREEK R/W.

JOB NO 6209-1-1 | SHEET NO. 2 OF 5

DESIGNED BY M.S. | DATE MAY 27, 1976

SELECTED ALTERNATE | APPROVED

REACH Nº	STATION BEGIN	STATION END	LENGTH	b or f	d or H	W	GROSS ACRES
	UPPER LLAGAS CREEK						
6A	522+00	552+00	3000	250	5	338'	23.28
	552+00	580+00	2800	340	5	428'	27.51
	580+00	582+00	200	NATURAL 80	5	136' *	0.62
	582+00	605+00	2300	NATURAL 60	7	120' *	6.34
	605+00	625+50	2050	NATURAL 100	7	160' *	7.53
	625+50	650+00	2450	NOMINAL 100	2	164'	9.22
	650+00	658+50	850	200	4	280'	5.46
	658+50	675+00	1650	90	9	194'	7.35
	675+00	687+00	1200	90	9	194'	5.34
	687+00	691+00	400	180	5	238'	2.19
	691+00	703+70	1270	180	5	238'	6.94
							101.78
				(*Includes 18' R/W each side for maintenance)			
6b	703+70	724+50	2080	145	5	233'	11.13
	724+50	735+00	1050	145	5	233'	5.62
							16.75
	WEST LITTLE LLAGAS CREEK						
7A	~~0+00~~	~~11+50~~	~~1150'~~	~~70'~~	~~7'~~	~~166'~~	~~4.33~~
	11+00	46+50	3550'	75'	6'	167'	13.60
	46+50	75+50	2900'	60'	5'	148'	9.85
	75+50	96+40	2090'	50'	5'	138'	6.62
							30.07
1b	96+40	130+20	3380'	50'	5'	138'	10.71
	130+20	144+00	1380'	50'	4'	134'	4.25
							14.96

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LLAGAS CREEK R/W.

JOB NO. 6209-1-1 | SHEET NO. 3 OF 5

DESIGNED BY M.S. | DATE MAY 27, 1976

APPROVED

SELECTED ALTERNATE

REACH Nº	STATION BEGIN	STATION END	LENGTH	b or f	d or H	W	GROSS ACRES
	WEST LITTLE LLAGAS CREEK						
8A	144+00	173+93	2993	CONC. 18	5'	43'	2.95
	173+93	195+15	2122	CONC. 16	5'	41'	2.00
							4.95
8b	195+15	204+00	885	CONC 12	3'	37'	0.75
	204+00	227+35	2335	16	4'	100'	5.36
							6.11
	WEST BRANCH LLAGAS CREEK						
9	0+00	55+00	5500'	90'	9'	194'	24.50
	55+00	169+00	11400'	80'	8'	180'	47.11
							71.61
10	169+00	182+00	1300'	80'	8'	180'	5.37
	LIONS CREEK						
	182+00	195+00	1300'	50'	7'	146'	4.36
	WEST BRANCH LLAGAS CREEK						
11A	182+00	220+00	3800'	70'	7'	166'	14.48
11b	220+00	226+00	600'	60'	7'	156'	2.15
	226+00	297+00	7100'	60'	6'	152'	24.78
							26.93

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LLAGAS CREEK R/W.

JOB No. 6209-1-1 | SHEET No. 4 OF 5

DESIGNED BY M. S. | DATE MAY 27, 1976

APPROVED

SELECTED ALTERNATE

REACH Nº	STATION BEGIN	STATION END	LENGTH	b or f	d or H	W	GROSS ACRES
	LIONS CREEK						
12	195+00	211+00	1600'	50'	7'	146'	5.36
	211+00	235+00	2400'	20'	6'	112'	6.17
	235+00	245+00	1000'	20'	5'	108'	2.48
	245+00	285+00	4000'	20'	5'	108'	9.92
							23.93
	MOREY CHANNEL						
13	211+00	230+00	1900'	20'	4'	104'	4.54
	230+00	245+00	1500'	15'	2'	91'	3.13
							7.67
	NORTH MOREY CHANNEL						
13	217+00	233+00	1600'	15'	3'	95'	3.49
	EAST LITTLE LLAGAS CREEK						
14	0+00	6+00	600'	80'	7'	176'	2.42
	6+00	32+00	2600'	85'	6'	177'	10.56
	32+00	52+00	2000'	85'	6'	177'	8.13
	52+00	121+50	6950'	70'	6'	162'	25.05
	121+50	180+50	5900'	55'	5'	143'	19.37
							66.33
	CORRALLITOS CREEK						
	0+00	6+45	645'	55'	4'	139'	2.06

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LLAGAS CREEK R/W.

SELECTED ALTERNATE

JOB No. 6209-1-1 | SHEET No. 5 OF 5

DESIGNED BY M. S. | DATE MAY 27, 1976

APPROVED

REACH Nº	STATION BEGIN	STATION END	LENGTH	b or f	d or H	W	GROSS ACRES
	CORRALLITOS CREEK.						
15A	6+45	10+00	355'	55'	4'	139'	1.13
	10+00	45+20	3520'	55'	4'	139'	11.23
							12.36
15b	45+20	77+50	3230'	55'	4'	139'	10.31
	TENNANT CREEK						
	77+50	126+70	4920'	25'	4'	109'	12.31
	EAST LITTLE LLAGAS CREEK						
16	180+50	220+85	4035	30'	4'	114'	10.56
				GRAND TOTAL:			705.00

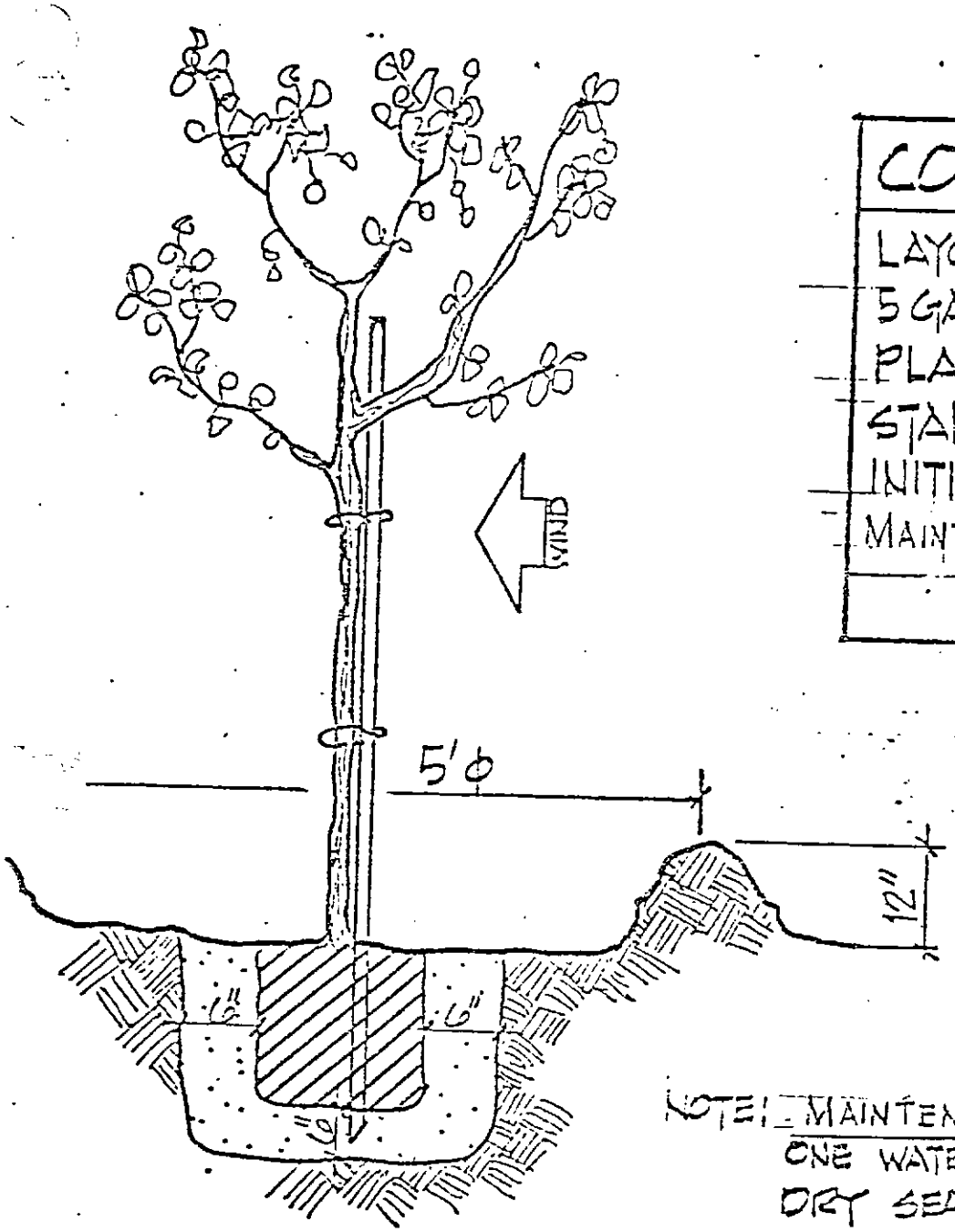
APPENDIX E

SUMMARY OF

LANDSCAPE SITE AND VISUAL ANALYSIS

REACH 1	Rural-meadow/lush willows and cattails/creek bed wildlife/good flora and fauna habitat/water in channel/plant trees at bridge to break straight visual line of levee at point of public contact.
REACH 2	Lush creekbed vegetation - willows, black walnut, smoke tree/good wildlife habitat/ keep density of trees if possible. Cottonwood/poplars/elderberry/existing water - fishes/ retain maximum existing growth-levee?/upstream from dump creek parallels slough - use for flood overflow?/ rural-meadow-farm.
REACH 3	Keep trees at bridges/existing wildlife habitat in lush channel bottom growth/block walnut, oaks, smoke tree/ willow/no water in channel. Sycamore/no excavation at south end. Rural-farm-meadow.
REACH 4	Rural-farm-meadow/willows-cattails-sycamore. Good wildlife habitats/keep strong tree clusters at bridge.
REACH 5	Engineered cut/rural meadow/freeway intersect high public impact/plant heavy/ strong tree clumps at bridge, occassional clumps along channel.
REACH 6a	Rural residential/existing creek bed trail/good tree growth-creek bed vegetation. Willows-oaks-alders-sycamores. Keep existing trees - area in general has good feeling and landscape character. Water in channel-fishes/wildlife habitat.
REACH 6b	Rural-residential/black walnut-alder-sycamore-willow-blackberry/water-fishes. Good feeling to area as is/ wildlife habitat.
REACH 7a	Rural meadow-scattered housing/farms/small existing channel/no water.
REACH 7b	Rural residential/local garden trees/existing channel is small.

REACH 7c	Rural-meadow-farm/existing channel is road-side ditch.
REACH 8a	Residential-Morgan Hill/no water in channel/cattails, weeds. Heavy planting for major new channel work.
REACH 8b	Small valley/rural-scattered residential. Existing channel is small and blends with landscape.
REACH 9	Channel excavated/major public impact along freeway-heavy landscape. Some trees planted (small)- Monterey pine, Eucalyptus/plant strong tree clusters.
REACH 10	Rural residential/existing small ditch blends with landscape. New channel work need heavy plantings at bridge. How will driveway culverts be handled.
REACH 11a	Rural-open meadow-orchard. Small existing ditch blends with landscape/willows-grasses/wildlife habitat.
REACH 11b	Rural-orchard-open meadow/small existing ditch blends with landscape/willows.
REACH 12	Rural-residential-open meadow ditch/grasses/how will driveway culverts be handled? Extensive excavation will be highly visible.
REACH 13	Rural-residential/small excavated ditch with rough banks.
REACH 14	Rural-meadow/section of freeway high public impact/ sections of channel piled with 2' diameter stones/strong tree clusters at bridge and occassionally along channel.
REACH 15a	Rural-orchard-meadow-scattered homes/small existing channel blends with landscape. Willows-grasses in channel/wildlife habitat.
REACH 15b	Rural residence-new tract residences. Will other areas of Llagas Creek that are now open meadow-orchard become housing in the future? If so, then strong tree clusters are important landscape elements/existing small channel blends with landscape/weeds and shrubs - wildlife habitat.
REACH 16	Existing excavated channel - rural residence - open meadow/acacia, oak.



COST PER TREE	
LAYOUT/TREE HOLE	$6.00
5 GAL TREE	6.00
PLANTING	3.50
STAKING	3.50
INITIAL WATERING	1.00
MAINT. DURING CONSTRUCT.	10.00
TOTAL	$30.00

NOTE: MAINTENANCE DURING CONSTRUCT.
ONE WATERING PER WEEK DURING DRY SEASON USING TWO TRUCK DRIVERS & TWO LABORERS.

LANDSCAPE COST CRITERIA

LLAGAS CREEK

LANDSCAPE COST ESTIMATE

REACH 3 (19,200')	One 20 tree cluster per 250' reach plus One 20 tree cluster @ each road crossing (3) 1560 trees @ $30 per tree = $46,800.
REACH 5 (2,000')	One 20 tree cluster per 250' reach plus One 20 tree cluster @ each road crossing (1) 180 trees @ $30 per tree = $5,400.
REACH 9 (16,000')	One 15 tree cluster per 250' reach plus One 15 tree cluster @ each road crossing (3) 1010 trees @ $30 per tree = $30,300.
REACH 14 (13,000')	One 15 tree cluster per 250' reach plus One 15 tree cluster @ each road crossing 1140 trees @ $30 per tree = $34,200.
REACH 2 (11,000')	One 20 tree cluster per 300' reach plus One 20 tree cluster @ each road crossing (1) 760 trees @ $30 per tree = $22,800.
REACH 4 (11,000')	One 20 tree cluster per 200' reach plus One 20 tree cluster @ each road crossing (3) 1160 trees @ $30 per tree = $34,800.
REACH 6a (18,000')	One 20 tree cluster per 200' reach plus One 20 tree cluster @ each road crossing (6) 1020 trees @ $30 per tree = $ 30,600
REACH 6b (3,000')	One 15 tree cluster per 200' reach plus One 15 tree cluster @ each road crossing (0) 227 trees @ $30 per tree = $6,800
REACH 7a (7,000')	One 15 tree cluster per 300' reach plus One 15 tree cluster @ each road crossing (3) 520 trees @ $30 per tree = $15,600 .
REACH 7b (6600')	One 15 tree cluster per 300' reach plus One 15 tree cluster @ each road crossing (2) 480 trees @ $30 per tree = $14,400.

LANDSCAPE COST ESTIMATE

REACH 8a (5200')	One 15 tree cluster per 250' reach plus One 15 tree cluster @ each road crossing (4) 500 trees @ $30 per tree = $15,000.
REACH 8b (3200')	One 10 tree cluster per 300' reach plus One 10 tree cluster @ each road crossing (0) 220 trees @ $30 per tree = $6,600
REACH 10 (4000')	One 25 tree cluster per 250' reach plus One 15 tree cluster @ each road crossing (2) 270 trees @ $30 per tree = $8,100
REACH 11a (3600')	One 15 tree cluster per 250' reach plus One 15 tree cluster @ each road crossing (1) 227 trees @ $30 per tree = $6,800
REACH 11b (8000')	One 10 tree cluster per 3000' reach plus One 10 tree cluster @ each road crossing (1) 280 trees @ $30 per tree = $8,400
REACH 12 (6800')	One 10 tree cluster per 300' reach plus One 10 tree cluster @ each road crossing (2) 250 trees @ $30 per tree = $7,500
REACH 13 (3000')	One 10 tree cluster per 300' reach plus One 10 tree cluster @ each road crossing (1) 110 trees @ $30 per tree = $3,300
REACH 15a (3600')	One 15 tree cluster per 300' reach plus One 15 tree cluster @ each road crossing (1) 197 trees @ $30 per tree = $5,900
REACH 15b (8200')	One 10 tree cluster per 300' reach plus One 10 tree cluster @ each road crossing (4) 310 trees @ $30 per tree = $9,300
REACH 16 (4000')	One 10 tree cluster per 300' reach plus One 10 tree cluster @ each road crossing (2) 150 trees @ $30 per tree = $4,500

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LLAGAS CREEK.

ADDITIONAL R/W FOR LANDSCAPING

AVERAGE 10' EACH SIDE OF CHANNEL

JOB No 6209-1-1 | SHEET No 1 OF 1

DESIGNED BY K.H. | DATE DEC 10 73

APPROVED

REACH No	LENGTH	AV "W"	ACRES	REACH No.	LENGTH	AV. W.	ACRES.
2	11,800	20'	5.42	13S	3,400	20'	1.56
3	19,700		9.04	13N	1,600		0.73
4	11,915		5.47	14	18,695		8.58
5	2,385		1.10	15A	3,575		1.73
6A	18 170		8.34	15B	8,150		3.74
6B	3,130		1.44	16	4,035		1.85
7A	8,540		3.92				
				TOTAL ALL REACHES			77.35
7B	4,760		2.19				
8A	5,115		2.35				
8B	3,220		1.48				
9	16,900		7.76				
10	2,600		1.19				
11A	3,800		1.74				
11B	7,700		3.54				
12	9,000		4.13				